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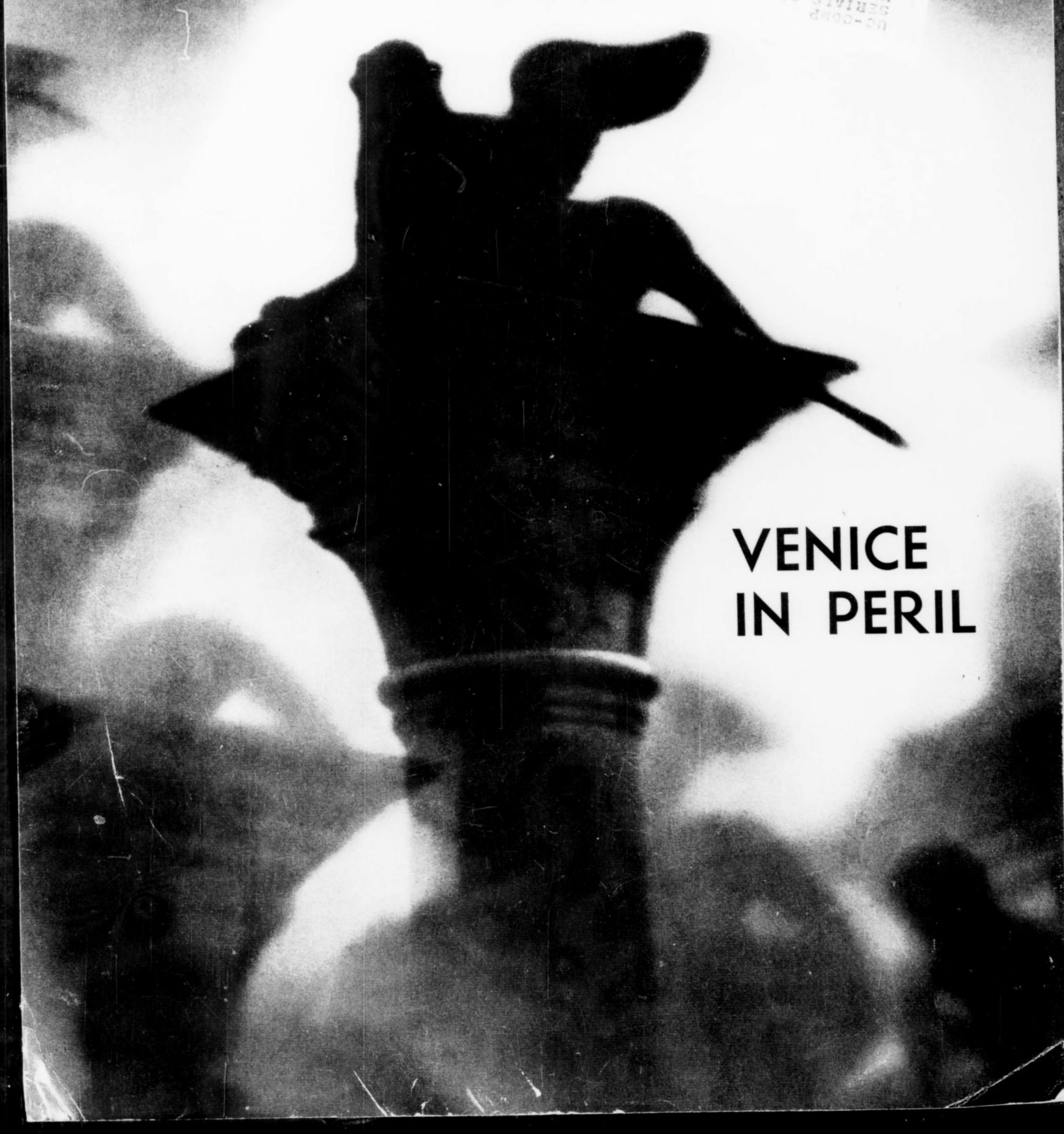
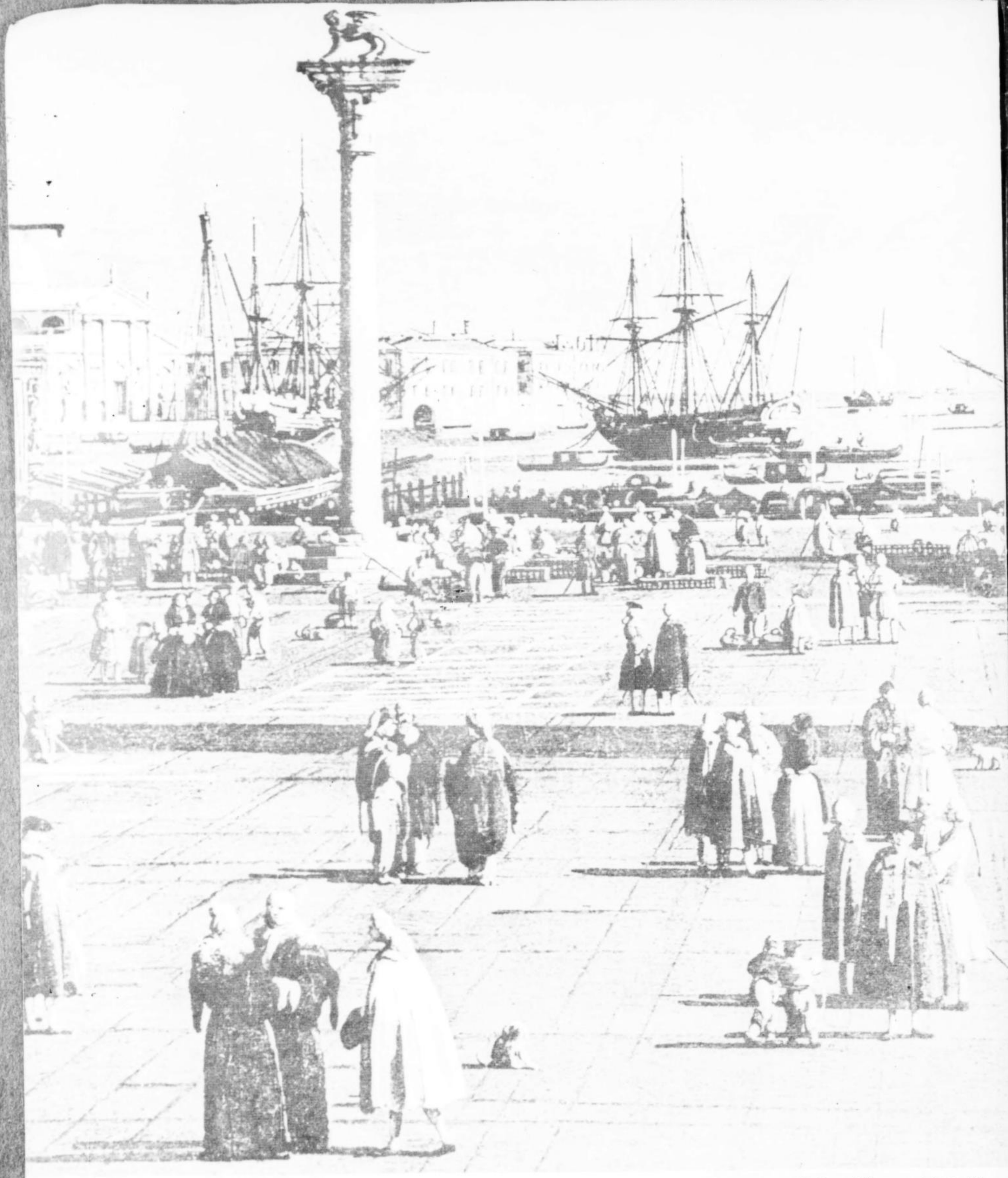


VENICE IN PERIL



TREASURES
OF
WORLD ART 29

Piazzetta di San Marco (detail)

Apart from the tall-masted sailing ships and people in the dress of byegone days, the celebrated square of St. Mark, in Venice, looks today exactly as it did in the 18th century, when this scene was painted by the Venetian artist Canaletto the Younger (Bernardo Bellotto, not to be confused with his uncle, the great Canaletto, Giovanni Antonio Canale). On left, one of two ancient columns of Egyptian granite which dominate the marble-paved Piazzetta di San Marco, leading from the square of St. Mark to the sea. Column seen here is surmounted by a bronze winged lion, emblem of St. Mark the Evangelist, patron of the city (close-up of lion is shown on front cover). The painting hangs in the Galleria Nazionale d'Arte Antica, Pallazzo Corsini, Rome.

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1968
INTERNATIONAL YEAR FOR HUMAN RIGHTS

Page

4 STILL TIME TO SAVE VENICE
By Ali Vrioni

10 THE THOUSAND PARADOXES OF VENICE
A major study by Unesco

20 THE CITY OF TEN THOUSAND MASTERPIECES
By Louis Frédéric

35 VENICE AND THE VENETIANS OF TOMORROW

39 UNDERWATER UNDERGROUND

40 VENICE, LINK BETWEEN ORIENT AND OCCIDENT
By Marcel Brion, of the Académie Française

46 PHILAE
An appeal by the Director-General of Unesco, November 6, 1968

48 THE SURVIVAL OF PHILAE
By Louis A. Christophe

51 ABU SIMBEL RESCUE OPERATION COMPLETED

52 THE FATE OF PHILAE IN THE 20TH CENTURY

56 FROM THE UNESCO NEWSROOM

58 LETTERS TO THE EDITOR

59 UNESCO COURIER INDEX 1968

2 TREASURES OF WORLD ART
Piazzetta (Venice)

N° 10 - 1968 MC 68-1-240 A

Photo © Erich Hartmann - Magnum

Cover photo

Symbol of the destiny of Venice, the winged lion has dominated the Piazzetta San Marco for eight centuries (see photo opposite). The creation of Venice was a victory of human genius and endeavour over a hostile Nature. Threatened today by the flood tides of the Adriatic, this ancient centre of art and culture faces greater perils and problems than at any time in its history.

STILL TIME TO SAVE VENICE

by Ali Vrioni

ITALY is renowned not only for the monuments and works of art she has inherited from the peoples and cultures of her historic past, but also for the care she takes of them. Authorities and individuals who, even in normal times vie with one another in caring for their country's art and monuments, compel the admiration of the world by the energy with which they react whenever disaster strikes their artistic heritage.

As the Italian Government is not in the habit of appealing to others for help in dealing with its own problems, it must have considered the circumstances to be truly exceptional, when, on November 4, 1966, it asked Unesco to appeal for international aid for the relief of Florence and Venice, victims of unprecedented floods.

Help did in fact come from all parts of the world, enabling the cities to overcome their immediate difficulties. In Venice, however, it became clear that the problems went beyond those usually encountered in the restoration and conservation of works of art, and that the preservation of this ancient city called for a special kind of co-operation. Why was this so?

One is tempted to reply simply that Venice is unique, both in being a microcosm of another age, paradoxically surviving in our times, and because of the profusion and richness of its art treasures. But is not this more or less true, in all fairness, for all great cultural centres, and can there be any question of establishing a hierarchy among them?

Consequently, it is not only because of its aesthetic merits, nor because of any sentimental leanings that the national authorities and Unesco consider Venice to be exceptional: it is because of the extreme complexity of its situation.

In point of fact, the fate of Venice's buildings and artistic heritage does not depend solely on physical factors, which, for the works of art to be protected, would only have to be modified by appropriate techniques.

AS is well known, the survival of this heritage is threatened by the storms which are causing more and more flooding in the city; by the currents which eat at the city's foundations when they are too swift and endanger its salubrity when they are too slow; by the gradual and apparently inexorable rise of the sea-level, combined with the slow subsidence of the islands; by the micro-organisms which attack the wooden piles on which the foundations are laid (see article page 10); by humidity and air pollution which eat into marble and cause paintings to deteriorate.

But it is not a deserted city, in a remote part of the world, that is suffering from these ills. It is an actively developing urban community undergoing economic, social and cultural changes which are, in many respects, critical, and which in some cases actually cause or at any rate aggravate these troubles.

Technology is almost always able to deal with problems when required to do so by a healthy body in the process of expansion. Experts are perfectly capable of designing and constructing dikes, sluices, meteorological warning systems, systems for controlling the flow of water in the canals and at the entrances to the lagoons, for strengthening the foundations, raising streets and houses, protecting buildings and their artistic treasures against damage from air and water—all things that Venice needs urgently.

But in order to do this, it is essential that the members of this community should agree on the future they want for the city and have the necessary vitality to make such undertakings possible.

Social and demographic studies show, however, that the population of the historic centre of Venice has been steadily declining over the past 18 years, though factories and ultra-

CONTINUED ON PAGE 6

GOTHIC GEM. Dating from the first half of the 15th century, the Ca d'Oro (House of Gold) is one of the most imposing palaces overlooking the Grand Canal, the "Main Street" of Venice, nearly four kilometres long. With its intricate stone tracery, the Ca d'Oro is a masterpiece of Gothic architecture. It is said to take its name from the gilding which once embellished its façade. Between the 12th and 18th centuries, some 200 palatial mansions were built along the Grand Canal.

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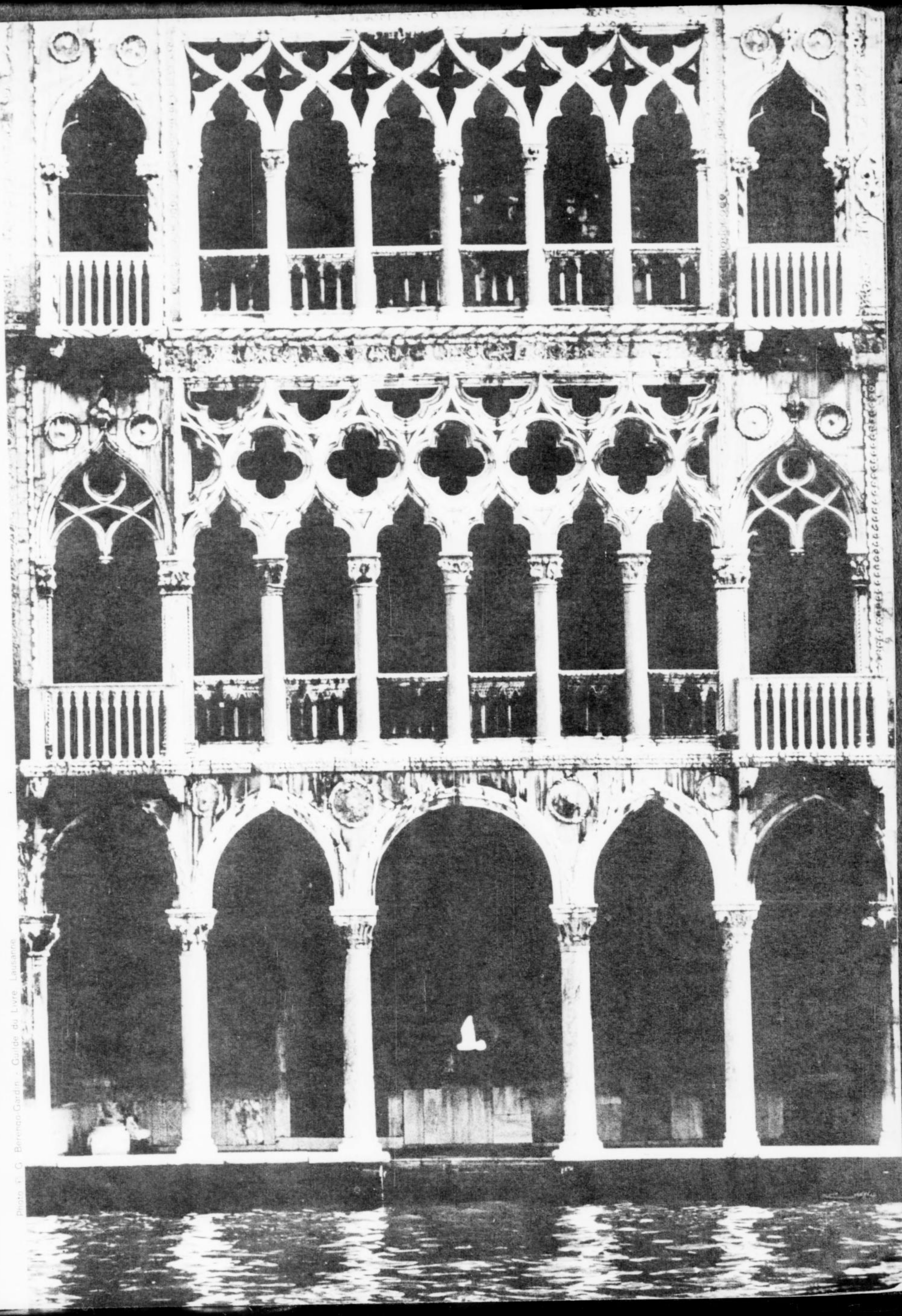


Photo F. G. Berenga-Gardin - Guilde du Livre Lausanne

The first full inventory of Venice's art treasures

modern harbour facilities have been set up and are increasing in the part of Venice situated on the mainland.

But this industrial expansion has not so far led to any economic revival in the historic centre. Some Venetians indeed consider that it is detrimental to the old town, and that the growth of the new Venice threatens to destroy the artistic and cultural values of the old. Is this true?

No one can yet reply to this question. One view is that the incompatibility which some people see between the modern spirit of industrial enterprise and the old magic of Venice is as real and irremediable as the contrast between the factory chimneys and cranes at Marghera and the churches and ornamental façades that give the islands in the lagoon their poetry. If this is so, the Venetian community will be split in two, and the two parts will grow indifferent and even hostile to one another.

The industrialization of the mainland, which will proceed without being subjected in any way to the influence of the traditional Venice we know, will probably attract an increasing proportion of the younger, more active people from the historic centre. The old city will find its intellectual and spiritual life radically transformed, and its possibilities of physical survival affected: for it is not at all certain that a city which has become a museum, which is partially depopulated and whose economic resources are problematic, will be able to defend itself against nature and the harmful effects of human activity, as successfully as a rapidly expanding city may.

The other answer is that economic development is not a threat to Venice, but its hope of salvation. The inventive spirit, the knowledge, the financial and technical resources that it implies may be used to save the Venetian heritage and generate a lively upsurge of fresh ideas and initiative, a new artistic movement—in other words, all the elements of the cultural fertility that was for long the attraction of Venice, and that may well return (see article page 35).

The same big industrial and commercial concerns which are today digging channels to make it easier for ships to cross the lagoon, and which have it in their power gradually to destroy the beauty and atmosphere of Venice, can, if they find it worthwhile, put just as much imagination, energy and money into protecting from floods and damage—by large-scale public works and the regular maintenance of what is to be kept from the past—the noble dwellings of the historic centre which they could have chosen for their impressive head offices.

YOUNG people would no doubt find life in an expanding city attractive and would therefore be encouraged to settle there and take part in its activities, instead of leaving it as they are doing at present. Provided, of course, that they could live there: economic and financial vitality, combined with appropriate legislative measures, can assist in improving residential zones and in providing comfortable homes in an architectural setting that has all the charm of a former age.

It is therefore probable that the fate of the "historic monument" that is Venice itself, and the art treasures which enrich its chapels, salons and narrow streets, will depend, in the last resort, on the choice made between these two opposing views.

But how will it be made? By chance? By the luck of the draw? When we consider the value of what is at stake, would it not be more worthy of our civilization that such a decision should be taken well-advisedly, on the basis of a sound and thorough knowledge of the problems?

This is obviously the line that the Italian authorities are following, by setting up, among other things, various national and local bodies to conduct research, co-ordinate measures and take action. And because the results of this research are of interest to the whole human race, which would lose a dream if Venice were to perish, Unesco has been asked to assist in this long and complex task.

The first step taken by Unesco was to make a systematic study of all the work being carried out in Italy that could throw light on the nature and interrelationship of the problems, both physical and human, which have arisen in Venice. Out of this analysis and reflection there emerged a voluminous report, and, what is more significant, a conviction—the conviction that the problems of Venice are so closely linked one with the other, so totally interdependent, that it is impossible to understand one without knowing the others, and impossible to solve one without dealing with them all.

Experience has shown that satisfactory results in such circumstances can be obtained only by using interdisciplinary methods, and that to solve the problems a comprehensive plan of action is needed.

The possibility of carrying out such a programme is in fact the problem of Venice, whose technical problems are only facets—often deceptive in appearance—of this main difficulty.

Naturally enough, considering its

CONTINUED ON PAGE 8

Venice has been flooded to a depth of over one metre at least thirty times in the last ten years. Left, close to the celebrated Rialto Bridge, gondolas take to the sidewalks and pedestrians splash through the flood waters in hip-length rubber boots during a recent inundation. In the lagoon city, the flood tides of winter now come more frequently than ever before.

Photo © AFI, Venice

Bird's-eye view of Venice in the early 16th century, engraved on wood by Jacopo de Barbari, one of the city's most famous painter engravers. In the foreground is St. Mark's Square. In the centre of engraving, spanning the Grand Canal, is the Rialto Bridge, which takes its name from the Rivo Alto district, the heart of Venice in the 9th century. At that time a wooden bridge crossed the canal (see photo page 23). The present bridge of marble (photo left) was built at the end of the 16th century.

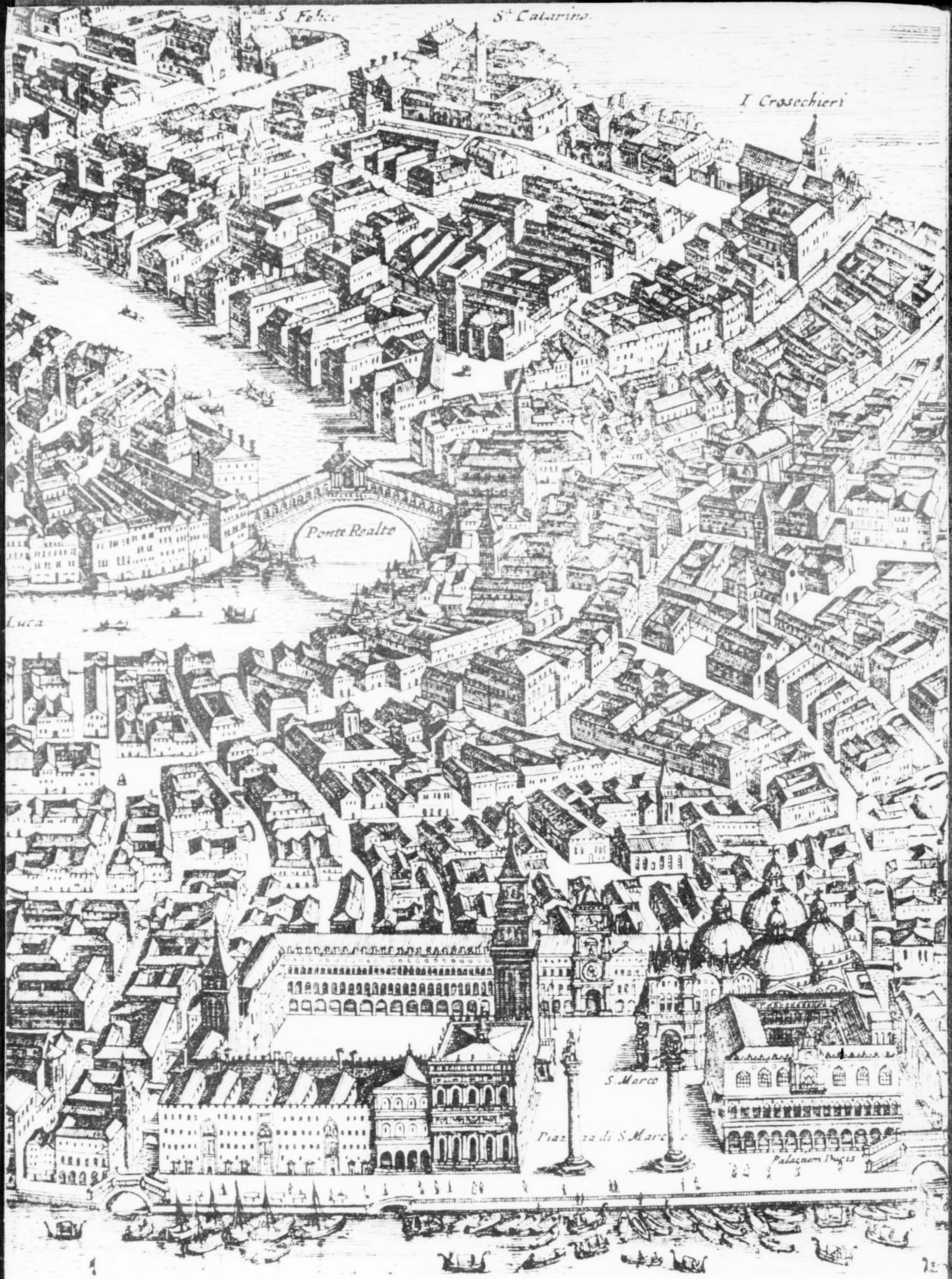


Photo © Fulvio Roiter - Museo Correr, Venice

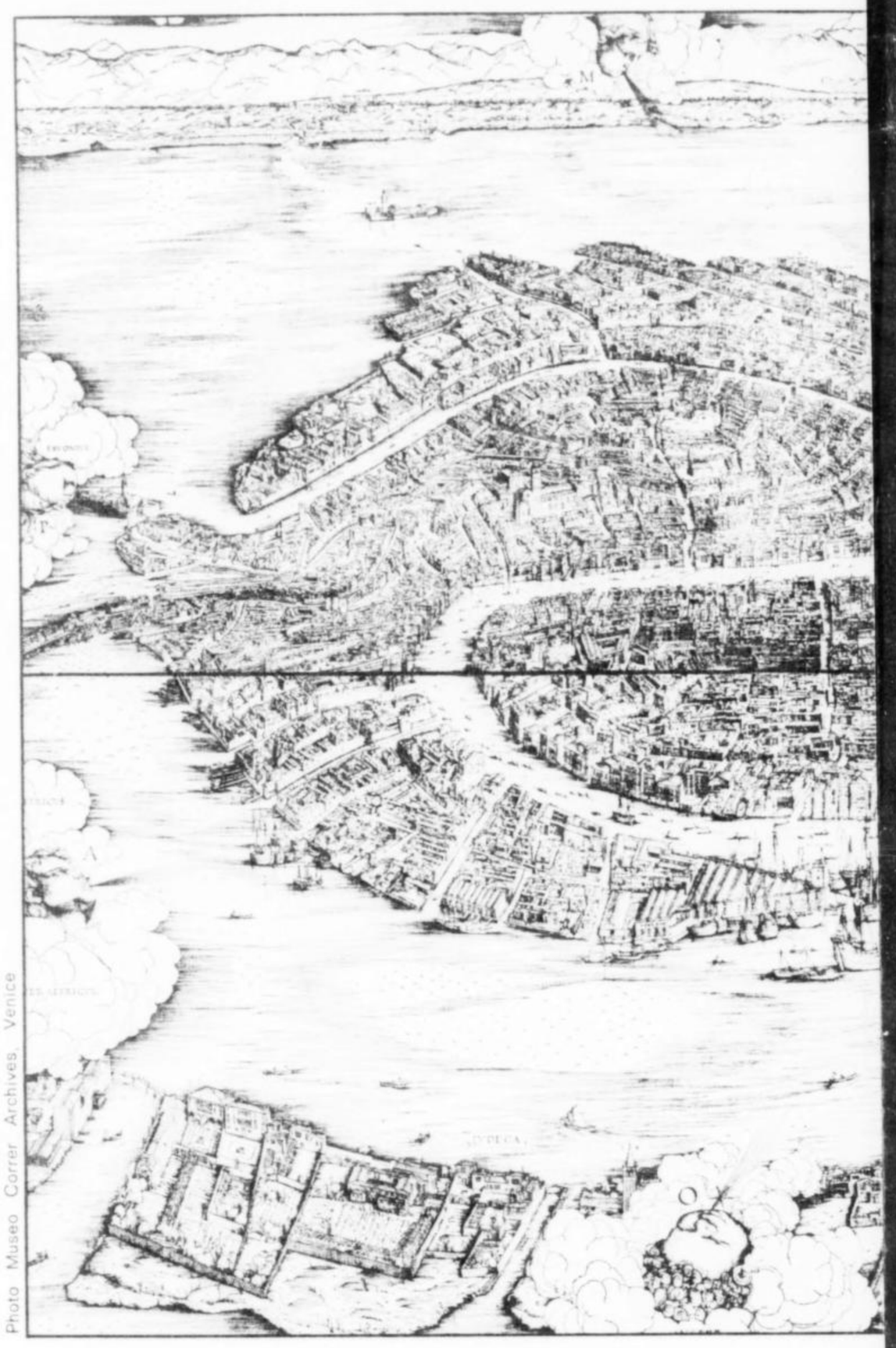


Photo Museo Correr Archives, Venice

This remarkable map of Venice was engraved in 1500 by Jacopo de Barbari. Displaying a consummate sense of artistry, the engraver mingled geographical detail and poetic fancy on the six plates (each measuring no less than 27 by 33 inches) that make up this giant map of the City of the Sea. Top of map, left, shows the western end of the Grand Canal facing the mainland; then the northern shore with the island of Murano in the background. Enthroned in the clouds is Mercury, symbol of the city's supremacy in trade. Top right of map, Torcello, one of the islands in the lagoon. Before Venice rose to fame and prosperity, its archipelago served as a refuge for people driven from the mainland by invasions in the sixth century. Bottom left: the island of Giudecca, on the southern shores of the lagoon, bottom centre, the great port of Venice, with Neptune, god of the sea. In background, St. Mark's Square and the Doge's Palace; in foreground, the island of San Giorgio. Bottom right shows the eastern entry to the port of Venice through which flows the sea. A modern visitor could still find his way through Venice with this 16th century map. In the historic part of the city most of the monuments and buildings shown still stand.

Venice
its waters, winds and gods

aims and the means at its disposal, Unesco has offered to help the Italian Government in drawing up and carrying out a plan for the preservation and restoration of Venice; this was decided by Unesco's Executive Board at its meeting in Siena, on August 30, 1968.

But a lot more information is needed before realistic plans can be made for useful measures. For example, until now there has been no complete record of the historical monuments, palaces and works of art. Unesco has therefore assisted, in agreement with the Italian Council for Antiquities and Fine Arts, in compiling the necessary inventories.

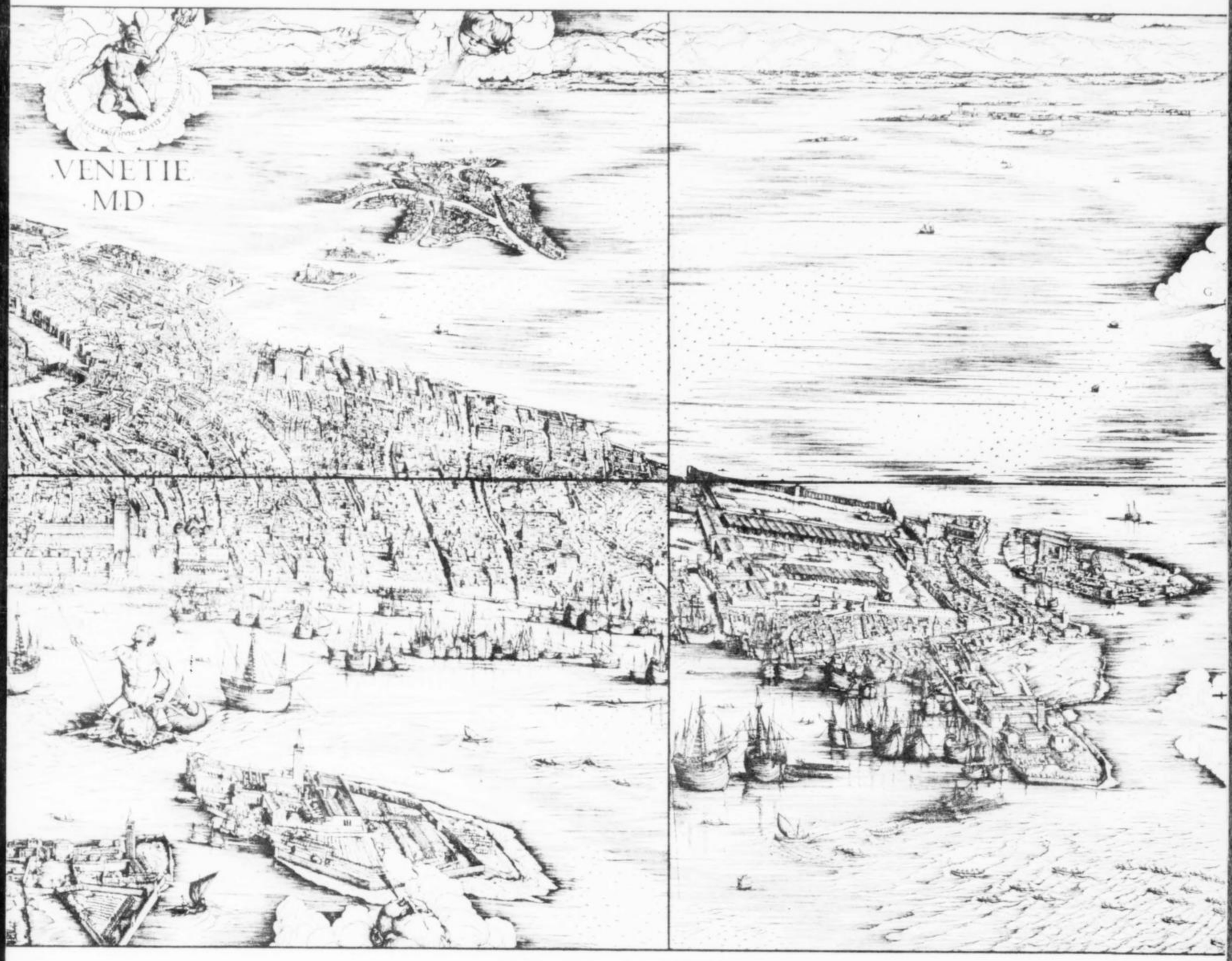
At the end of the first survey, some 16,000 index cards had been drawn up, complete with photographs specifying the state of preservation of each work of art, the restoration required, and what this would cost. A second survey produced similar files relating to palaces and religious buildings. A third survey is in progress, on housing conditions in the historic centre and ways of improving them. Another is dealing with the structure of the Venetian metropolis in 1980 and the problems of communication.

Finally, Unesco is preparing to put its scientific services at the disposal of the Italian authorities, in order to reach a better understanding of the hydrography of the lagoon, the sea currents, the phenomena of soil mechanics and hydrobiological influences—all of which are indispensable to any protective action.

If Venice were content merely to study its problems and Unesco to join in that study, irremediable catastrophes might well occur before the scientists had agreed on their causes. While paying due attention to the need for research and objective thinking, Unesco is therefore principally concerned with taking practical measures.

Yet another example of the complexity of the problem of Venice is that treatment must be started while the laboratory analyses are still being carried out. This undoubtedly presents risks, but is it not often the same when the patient is a human being, whose breathing might stop at any moment? The historic monuments, statues and altars which are being attacked by "stone disease," the frescos which are disappearing, the paintings which are losing their colours, cannot wait either: and the sooner the deserted palaces are lived in once more, the better (see article page 20).

Unesco's campaign is therefore designed, from now on, to present these problems to people and institutions all over the world, who do not wish to see Venice disappear. Universities, foundations and large business concerns can purchase or rent a palace, restore it and use it to



house branches of their activities, thus enjoying the incomparable setting that Venice offers, and at the same time helping to restore the city to its original splendour. All people, even those with little money at their disposal, can share in saving the works of art—by sending their contributions, however modest, to the special fund opened by Unesco for the protection of the Italian cities stricken by the flood disaster of 1966.

Help is coming already from all quarters: more and more will be received, and will become increasingly effective, as plans for the protection and cultural development of Venice take form and are carried out.

Obviously the final decisions must rest with the Italian authorities themselves and Unesco can give only limited assistance in devising plans and carrying them out.

Nevertheless, this assistance does not only involve Unesco's committees, its experts and consultants and the services of its secretariat. It brings into play the many powerful international associations, both governmental and non-governmental, with which Unesco co-operates, and the learned institutions upon which it can call for help—in short, all the means of communication and co-ordination at its disposal, not to mention those in whose establishment it has been specially concerned.

One such example is the committee that the Italian Government and the Director-General of Unesco agreed to set up to advise on what should be done to save Venice. Outstanding figures from Italy and other countries have agreed to take part in its work, so that the knowledge and wisdom of the whole world may serve the threatened city.

Venice may perish: not perhaps as in the apocalyptic predictions that some people like to make, by sinking beneath the waves but, just as tragically, by succumbing to the complex, insidious, hidden ills which sap her strength and energy.

But Venice may also survive. It is possible to save her: Unesco would not devote itself to a hopeless cause.

Venice can only be saved, however, on one condition: that its rescue is conceived as a collective task, a great common venture requiring organization and concerning everyone.

The Venetians first of all: those who love ancient things, as well as those who are concerned for the achievements of tomorrow.

And the people of all other countries too—so that in these islands far from their own frontiers, yet near to them in spirit, they may continue to find not only a sanctuary of the past, but the outpost of a world which, despite the disillusions of history, seeks to be truly universal.

THE THOUSAND PARADOXES OF VENICE

In this issue, the UNESCO COURIER presents the salient findings of a comprehensive study on the problems of Venice recently completed by Unesco. The study makes the first systematic assessment of the complex ensemble of problems, physical and human, that face Venice today, and reviews the solutions proposed by Italian specialists and other authorities. The article below describes the struggle waged by the island city against the tides and currents eroding its foundations, and a second article (page 35) examines the problems encountered by Venice in its adaptation to the needs and demands of modern life. In a third article inspired by the Unesco study (page 20) Louis Frédéric surveys the ravages suffered by the city's unique heritage of art and monuments.

Photo © De Biasi - Mondadoripress, Milan

DESPITE all her splendid achievements, perhaps Venice's greatest triumph has been the ability to survive. Even the facilities of her lagoon, so advantageous to Venice, were not a gift from nature. If the ancient Venetians had not wrested it from its natural course, the lagoon would long ago have silted up and leveled out to form a plain.

Its mirror-like waters, immortalized by so many poets and painters, would have long since given way to rising land, and Venice herself would have become another Aigues-Mortes (the medieval French port now isolated from the sea by marshland), if the immense work carried out through the centuries had not saved it from the fate of other great lagoons, described by Pliny, Strabo, Vitruvius and Livy, which have disappeared along the Adriatic coast, north of Ravenna.

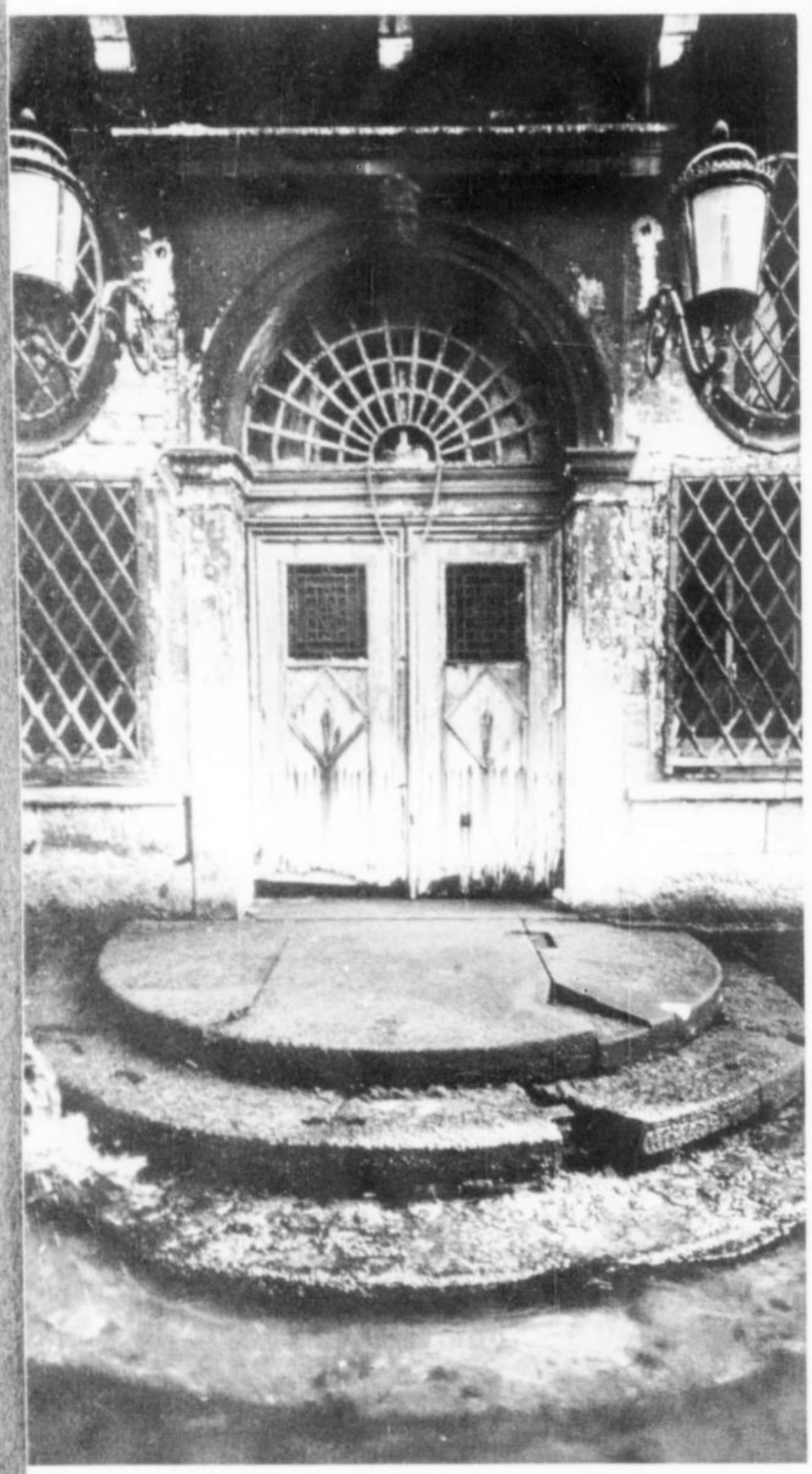
The Venetians had to be exceptionally perceptive to calculate what steps to take, and to avoid errors in judgement or rash moves that would allow the sea to take its revenge on the haven they so tenaciously defended against the fatally soft river mud.

Of course, their ingenuity and wisdom were not always as infallible as their respectful descendants would like to believe. Yet, despite the fact that they have not been able to assure their successors an entirely secure

CONTINUED ON PAGE 13

Right, the resplendent façade of the 11th century Basilica of St. Mark on whose decoration Venice lavished rare marbles, sculpture and mosaics right down to the 17th century. A triumph of Byzantine architecture adapted to the artistic tastes and genius of Venice, St. Mark's is the illustrious symbol of the art and culture that flowered in Venice when the city was mistress of the seas and the link between East and West. Left, reflected in the flood waters covering St. Mark's Square, the 98 metre (324 ft.) Campanile. The Square's original bell tower was built in the 12th century, reconstructed in the 14th and completed in the 15th with a marble spire. The structure collapsed in 1902 and was rebuilt in 1912.

Photo © Giorgio Lotti - Mondadoripress, Milan



domain, they have at least been able to show them how to use their own skills to turn nature's "bulldozer" leveling power to their advantage.

The Venetian lagoon, formed from an ancient sea marsh, is Italy's largest inland sea water system. Shaped like a shallow crescent running north-east to south-west, it is approximately 55 kilometres long while its width varies from 8 to 14 kilometres; its total area, including all its islands, is approximately 550 square kilometres.

This salt water lake is separated from the open sea by a broken offshore barrier, consisting of flat, elongated islands and peninsulas of glacial and alluvial origin, dating from the Quaternary Period, and therefore relatively recent and soft. The hundreds of tiny islands dotted over the lagoon are of the same origin and substance: clay and sand.

The rivers which had helped to form the lagoon might eventually have filled it up with mud. In fact, they did carry a profusion of rushes and reeds to the populated islands, which slowed down the currents and hindered the free passage of boats. The Anopheles mosquito thrived in the river waters, spreading disease which, in the 17th century, gradually decimated the population of Torcello, the "first Venice".

It is not at all surprising that one of the main concerns of ancient Venice was to protect herself from the capacity of the rivers to spread disease. People often said, forgetting all that it owed them, that the lagoon had three enemies: the land, the sea, and man.

The formidable task of mastering the rivers was not accomplished without intellectual and physical difficulties. Experts disagreed on the nature and urgency of both the problem and its solution. Many engineering works had to be abandoned, dismantled or completely remodelled, when they proved to have a disastrous effect on some aspect of the lagoon's economy.

But seen as a whole, in the perspective of time, the Venetian Republic's defensive system against the rivers is nonetheless an impressive achievement. They succeed-

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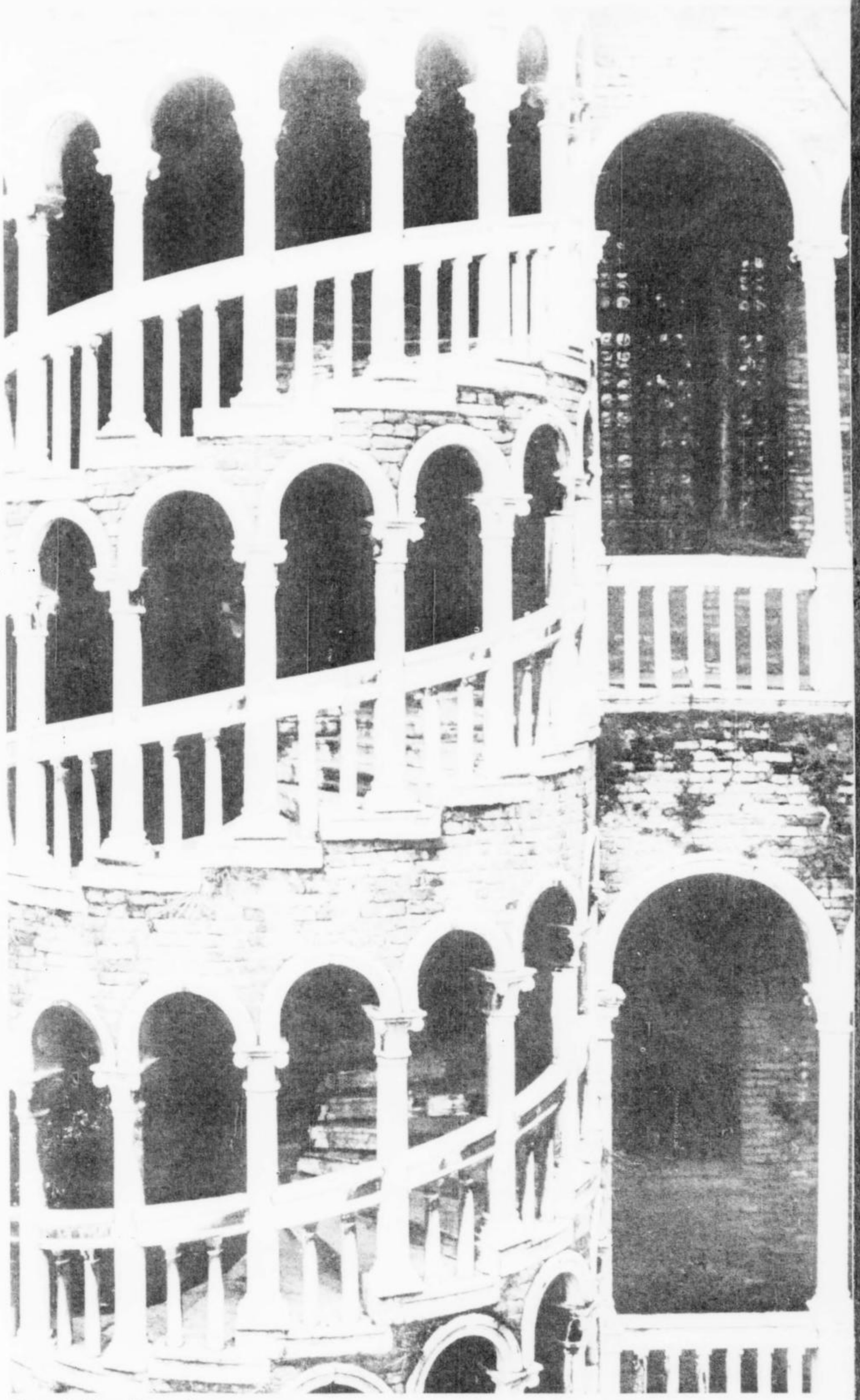

Photo © Fulvio Roiter, Venice

Far left, the entrance to the Palazzo Garzoni on the Grand Canal, in its present state. This majestic 15th century building was intact at the turn of the century, when it housed the French Consulate in Venice. To restore its walls, eaten away by damp, and its damaged frescos would cost 200 million lire ($320,000). Left, one of Venice's narrow canals with its traditional gondolas. A century ago, ten thousand gondolas plied these waterways; today there are barely 400.

Above, the remarkable spiral staircase which climbs the tower of the 15th century Palazzo Contarini. Entirely built of Istrian marble, it strikingly recalls the Tower of Pisa.

See-saw battle of sinking land and rising waters

ed in taming the Po and turning it southward, as well as diverting the Brenta, the Piave, and the Sile away from the lagoon. And, although the *conterminazioni* (trenches or canals built on the outskirts of Venice) did not prevent the areas nearest the sea from gradually turning into marshland, they did at least succeed in regulating the salt content of the water, thus eliminating malaria.

Some maintain that these measures, necessary though they were, may have been too radical, and have deprived the lagoon bed of the supply of fluvial sediment which would have compensated for the loss or settling of its original alluvium, thereby speeding up the subsidence process. A secondary and less hypothetical result of the diversion of the rivers is that the bottom and banks of the lagoon have become more exposed to the effects of erosion by sea currents, whose force is no longer absorbed by a cushion of silt.

The Venetian lagoon is connected to the open sea by three *porti*, or channels, in the narrow off-shore sand bar. From north to south, they are the *porti* of the Lido, Malamocco and Chioggia.

EVEN before 1,000 A.D., the Venetians were studying possible ways of preventing the mouth of the Lido channel from silting up. One of the first steps was to close the channel which existed at that time north of the island of San Erasmo, while at the same time, digging a new channel to connect the basins of the northern lagoon, the waters of which were quite distinct. This made the Porto di Lido the main entrance to the lagoon, despite the ancient naval supremacy of Malamocco, once the seat of the Byzantine suzerainty.

Chioggia, the third *porto*, was improved recently, as were the very long parallel breakwaters, built under the Austrian and Italian governments to guide the tide through the three *porti*, and protect them from silting up.

These channels have many advantages, one of which is to allow ships access to the lagoon, enabling Venice to continue to be an important passenger and cargo port. But their most important function is hydrodynamic: the purifying tides which move through the *porti* twice a day, assure that the Venetian lagoon continues to be a living, dynamic part of the sea.

Tides move in a vertical direction: if the lagoon were an open bay, the water would rise and fall along the embankments of the city without running through the *rii*, the city's narrowest canals. Because it is connected to the sea only through the narrow bottlenecks of the *porti*, there is a time lag between the level of the lagoon and that of the sea. Here we see the scientific principle of communicating vessels at work—one of which is small (the lagoon) and the other infinitely larger (the sea).

As the tide rises, the sea water spreads horizontally inside the lagoon, its movement helped or hindered by such factors as the season, time of day, direction and speed of wind, and atmospheric pressure. The water forms into currents at each *porto*, which then flow across the lagoon and through the channels between the islands, until they reach the mainland.

The speed of the currents is determined by the size of the lagoon basin in relation to the size of the entrance. The larger the basin, the faster the current entering it; conversely, the smaller the basin, or the greater the proportion of land above water within it, the slower the rate of flow. By altering the size of the *porti*, this flow can be corrected. Unlike its speed, however, the height of the tide is decided by lunar and meteorological factors.

The latest measurements of the tidal flow at the entrance to the Lido channel show that its speed can be as much as two metres per second. Usually, it is not more than one metre per second and naturally loses its impetus as the current crosses the lagoon, especially slowing down after entering the maze of canals within the city, and coming to a complete standstill in some of the small *rii*.

As the tide goes out, the lagoon is momentarily at a higher level than the sea: its waters spill out into the open sea through the same *porti* at about the same speed and volume at which they entered, six hours before.

THIS ebb and flow of salt water plays an essential rôle in the life of Venice. It allows the lagoon and the urban canals, at present the only sewer system the city and the islands have, to be cleaned, or "swept" (as the ancient Venetians used to say.) And its oxygen content is almost sufficient to purify the water. In those interior canals where the flow is strong, the current carries away silt, keeping the waterways open, but where it is weak, they become blocked by silt deposits which build up at the rate of seven centimetres per year.

Obviously, the movement of the lagoon waters is not beneficial in every respect. The same currents that "sweep" the canals, eat into the foundations of the buildings which line them. Dramatic examples of the damage that can result from this insidious erosion occurred in June, 1950, and again in January, 1952, when an entire wall of the ancient Fort of Sant' Andrea and an abutment of the San Nicolo bridge collapsed into the waters of the canals near the mouth of the Lido.

Moreover, in addition to the shores of the islands, the currents erode the *porti* themselves, gradually increasing their size and allowing more water to pass through them at greater speed, a phenomenon that gives rise to other dangers.

These currents, accused of being much too weak when they are needed to clean out sluggish canals, and of being too strong and destructive in other respects, constituted a problem over which the Venetian Republic laboured with great difficulty in its search for satisfactory and permanent solutions.

VENICE must certainly pay a high price for the advantages of her *porti* in calm weather. When the sea and the winds beat against the city, they leave the lagoon exposed to the onslaught of the *acqua alta*, or "high water" (a temporary but critical increase in the level of the lagoon), and prompt many a Venetian to wish that it were completely cut off from the sea! But once fine weather returns, they need only think of the stagnant, fetid pond that it would become if it were not connected to the sea, to be grateful for the regular irrigation of the salt water which has determined the rhythm of their life and culture for 15 centuries.

It would be reasonable to suppose that the waters which pour into the lagoon at high tide through the narrow gaps in the off-shore barrier would blend together into one great body of water, which would then ebb away at random through one or other of the entrances, i.e. the water that entered at Malamocco would depart from Chioggia, and vice versa. In fact, such is not the case.

The waters sweep in through the three *porti* at the same time, and spread out into the lagoon at different speeds. Although they draw close together, they do not merge, each staying within its invisible boundaries: horizontal movement is theoretically nil. As the tide ebbs, the waters retreat back to the sea along their same course, and leave the lagoon through the same *porti* by which they entered.

These "watersheds" divide the lagoon into three basins of unequal size. The northern (Lido) basin, which contains the city itself, takes up nearly half the area of the lagoon. The two others (Malamocco and Chioggia) respectively account for approximately 30 and 20 per cent of the area, including land, water and *barene* (islets and sand-banks, both

Below, Venice as depicted on a map made in 1534. Located on its archipelago of islands in the centre of the lagoon, the city is protected from the Adriatic only by a narrow cordon of islands and peninsulas bisected by channels through which flow the tides that clean and refresh the lagoon waters. Venice was formerly well protected from the sea, but today its safety is dangerously threatened by high water levels. Photo right shows the little island of Burano, in the north-eastern part of the lagoon. Around Burano spread the "barene", marshlands which the sea covers at high tide, daily in certain places, from time to time in others. Many of these marshes have now been drained and consolidated to create new land for the development of industrial complexes.

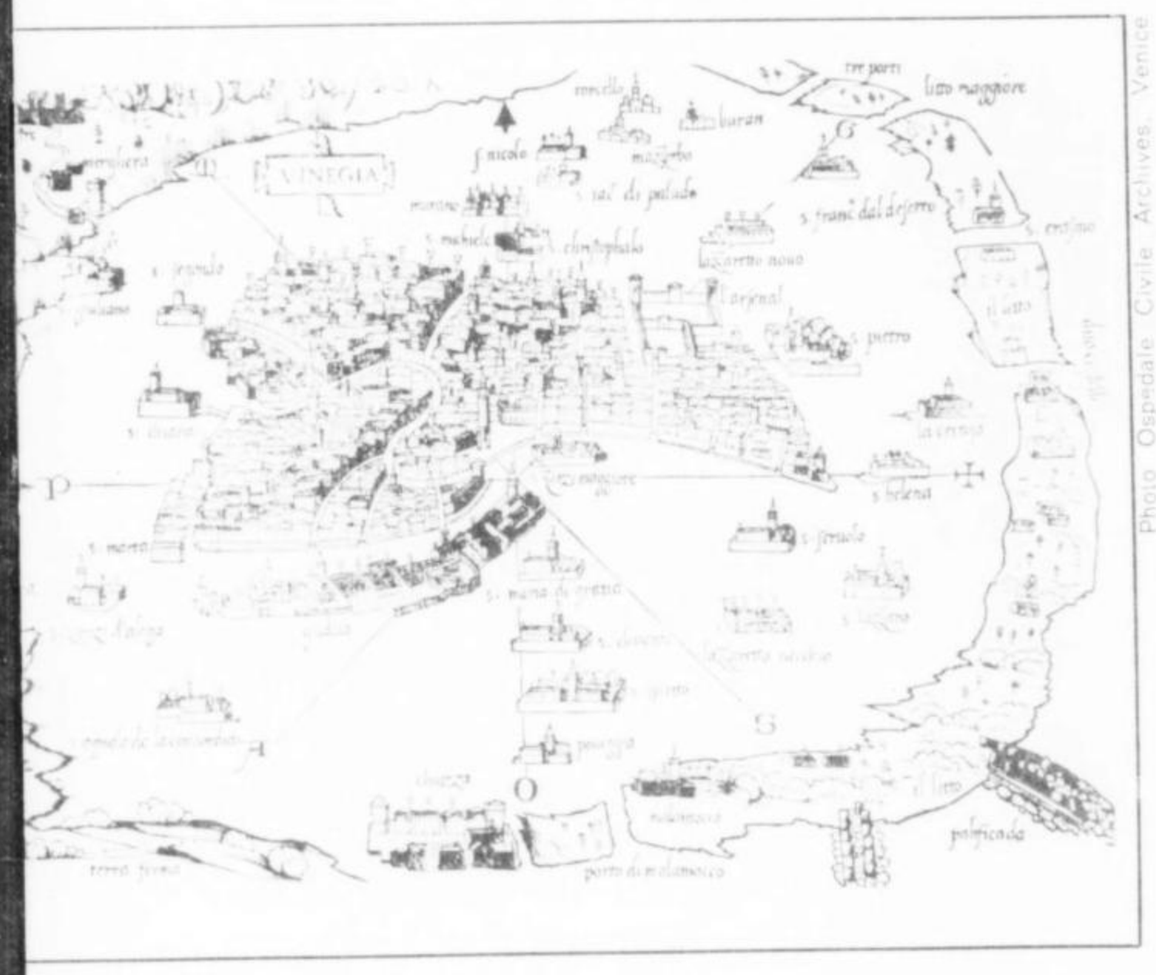

Photo Ospedale Civile Archives, Venice

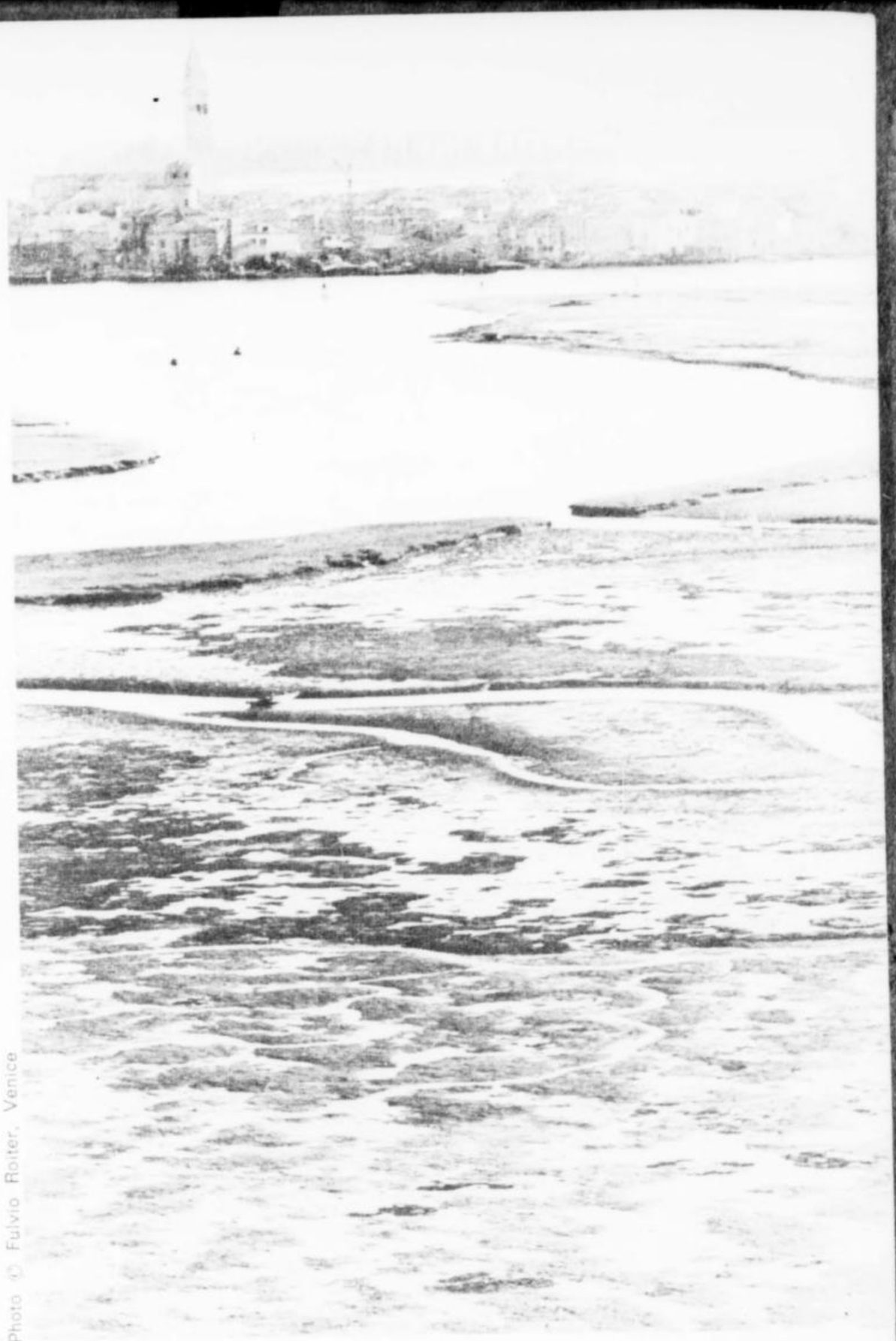

Photo © Fulvio Roiter, Venice

above and below the water.) But the dividing lines between these basins are often temporarily shifted by winds and other sources of instability.

Movement through the lagoon, both for ships and sea currents, follows the channels between the shoals created by nature or dug by man. A look at a hydrographic chart shows how many there are and how tortuous are their courses. Those which follow a straight line, like the Vittorio Emanuele III channel joining the western end of the Giudecca Canal to Port Marghera, are artificial and mostly of recent construction.

A potential danger for the historic city of Venice was created when large oil tankers started to take this route, via the Porto di Lido. It became clear that a more suitable approach had to be found for these cumbersome ships whose cargoes could catch fire, explode or leak out into the water. In 1953, the maritime section of the Ministry of Works proposed that a new navigable channel be opened between the Porto di Malamocco (further away from the city), and the industrial zone on the mainland.

This new channel is nearing completion. Eighteen kilometres long and 180 metres wide, it begins in the open sea, five kilometres beyond the lagoon, at a depth of 14.5 metres below sea level, from where it slopes up to 12.5 metres at Marghera: it will allow ships of 65 thousand tons to pass through to the oil port, and ships of 40 thousand tons to the industrial port. The channel project is part of a programme of economic expansion for reclaimed areas on the mainland.

Misgivings have been voiced about what effects this interference with the basic structure of the lagoon could have on its hydrological conditions, and ultimately its ecology (the interrelation of living organisms and their environments) and the security and preservation of historic Venice itself.

According to experts from the Netherlands, a new deep channel between Malamocco and Marghera will certainly make the tides in the lagoon correspond more closely to sea tides; Venice would be nearer to the sea, so to speak, and there would be less difference between the high tide levels in the city and those in the open sea.

An "Old Venetian" commenting on the matter, said that he could see other things besides advantages in the prospect of the waves breaking against the Doge's palace with the same violence as they lashed the embankments. Certain experts are afraid that the freakish force of the waters and their power to erode the foundations of the city would only be strengthened by such changes, not to mention the probable increase in the occurrence of "high water." They also feel that the new currents which are formed might gradually suck away the original river mud in which the piles of Venice are embedded, thus making its buildings even more unstable.

There are other experts who declare that if the Malamocco tidal basin were enlarged, the Lido basin would automatically become smaller, reducing the force of the currents entering the Lido channel, and making them less erosive. But the capacity of these currents to "sweep" and purify their part of the lagoon and the canals of Venice by renewing their water, would also be reduced.

The choice between sacrificing the city's salubrity to its solidity, or vice versa, is a dilemma on which experts have disagreed to the point of questioning the fundamental data of the problem. Some think that the ground and the walls are firmer than they are said to be, and that the main

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Sentinels against the invading sea

thing is to promote the hydrodynamic exchanges which can cleanse the waters. Others consider that the speed of the currents pose a threat so serious that sooner or later, it will cause Venice to collapse.

The pessimists also fear that the changes in the hydrodynamic structure of the lagoon, brought about by the large-scale projects in progress, will render Venice even more vulnerable to "high water."

Located off the north-south mainland shore are tiny islands caught in a network of micro-canals; they are covered by flowers which blossom into lilacs in summer and autumn, and provide a desolate haunt for sedentary and migratory birds. Some of these islands (the humid *barene*) are submerged at high tide while others (the dry *barene*) are permanently above water, except at times of "high water."

This landscape is gradually giving way to thermoelectric installations, oil and chemical factories, harbour facilities, residential districts, airports, and agricultural areas, as new sections of this "dead lagoon" are drained to meet the requirements of economic development.

Earth dredged from the deep Malamocco-Marghera channel is brought by pipeline, and used to create 1,200 hectares (almost 3,000 acres) of solid land. Destined to become the "Third Industrial Zone" of Venice-Marghera, this new area will rise from the lagoon bed to a height that will assure its safety, even from the most exceptional tides.

This industrial development and the alterations to the lagoon's morphology are not looked upon with favour by those who, relying on the theories and experience of past centuries, advocate the preservation of the natural movement and equilibrium of the lagoon. In fact, where the Venetian Republic sought to protect the lagoon from encroachment by the mainland, the trend today is in the opposite direction.

The determination of the ancient Venetians to preserve the *barene*, was based on the belief that these shallows, combined with the capillary attraction of water to the mainland, acted as a "regulating valve" in the complex dynamics of the lagoon tides. Today, the decrease in these natural overspill areas is generally regarded as one of the factors responsible for the increasingly severe floods suffered by Venice.

THIS situation could deteriorate even more if the Malamocco currents—their speed increased by the depth and straightness of the new channel—are no longer absorbed by the buffer zone of the *barene*, but instead hit an earthbank which could turn them back to the north, and possibly direct their force on Venice.

Any increase in the proportion of land to water (two examples are Tronchetto, and other new islands, and the Liberta Bridge, linking Venice to the mainland), and even the installation of fish preserves, might compromise the security of Venice.

Altering the shape of the lagoon would, of course, affect the movement of the tides and their currents (about which little is known even today), so the reclamation of the *barene* poses a definite problem.

The authorities responsible for the monuments and historic buildings of Venice have stressed that if more marshy areas are dried out, the preservation of the cultural heritage of the city would be in potential danger. They have asked the appropriate ministries to re-examine the implications both of the work in progress and future projects.

The ancient defences—earth and stone embankments, palisades and breakwaters—which the Venetians built to protect the eastern shores of the coastal islands, did not stand up for long against the repeated assaults of the great waves. And what remained of them were swept away by the tidal waves of 1686 and 1891.

With their shore-lines their only defence, these sentinels, comprising from north to south the lido of Cavallino, the islands of San Erasmo, Vignole, Certosa and San Andrea, the off-shore regions of the Lido and Pellestrina, and the Lido of Sottomarina, became more and more vulnerable as the waters ate into their banks, and their populations increased.

To forestall the effects of the sea, the Venetian engineers conceived the *Murazzi* which, it was hopefully claimed, would "last longer than brass." The project was completed

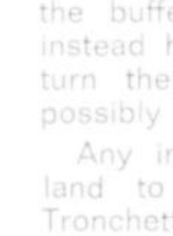

Photo Unesco - Dominique Roger

WAVE-SMASHERS. These massive tetrahedral-shaped blocks of concrete are used to reinforce the bastions which Venice has raised against the sea. Sunk along the shores of the Adriatic, they help to break the force of the waves and tidal currents that surge across the lagoon and smash against the unprotected city buildings.

Venetians skating on the lagoon to the north of their city in the bitter winter of 1708—an 18th century engraving.

Photo Galleria Querini Stampalia, Venice

in 1782, after 38 years of work (the swan song of the republic, which only 15 years later would surrender its sovereignty.)

Built of Istrian stone and consisting of embankments, levees, and walls, these dikes protect over four kilometres of the shore of Pellestrina and more than one kilometre of Sottomarina's shore. They held firm until 1825, when a tidal wave damaged them.

They were repaired but during the catastrophe of November 4, 1966, they were breached in several places. They are in the process of being rebuilt according to improved plans, and with the help of a government credit of 9,000 million lire to the municipality.

Another project that has been approved calls for the construction of sea defences on the islands in the mouth of the Lido channel. The Lido is not defended by the *Murazzi*. Although its wide beaches ought to help protect it, the sand is carried away by the strong tides, and the deposits which once helped to replace the sand have been greatly decreased by man-made river embankments. Other impediments are the upper breakwater of the Porto di Lido and the lower breakwater of the Porto di Chioggia, which stop sand from drifting in from the north and the south.

Consequently, the beaches of the Lido and Pellestrina "loosen up" more each year and shrink, despite fresh loads of sand brought in at great expense by hotelkeepers. Even the ground supporting the *Murazzi* may be threatened eventually by subsidence, due to this loss of sand.

In an effort to retain the sand, small jetties perpendicular to the beaches, called *pennelli*, have been built. The same idea was unsuccessfully tried centuries ago by the Venetian Republic; unfortunately its effectiveness does not seem to have improved with time.

AFTER the *Murazzi* have been rebuilt, the "sentinel islands" protected, and the beaches strengthened, it should be possible at least to hope that the coast and the lagoon will be safe for a time from the fierce onslaughts of the sea, although it will still be able to enter the lagoon through the three *porti* of the Lido, Malamocco and Chioggia.

The floods of November 4, 1966, which damaged Venice and the coastal islands, aroused the attention and sympathy of the world, and the concern of Unesco. Although a dramatic catastrophe, it was not unique; simply the most spectacular example of a recurring phenomenon—the *aqua alta*, or "high water."

"High water" is caused by the chance combination of lunar, meteorological, and hydrodynamic factors, and its nature is fairly well known. Less is known about what causes it.

The effects of "high water" are increased by a permanent geophysical condition which, although not unique to Venice, takes on grave significance in the lagoon: the gradual settling of the lagoon bed, combined with the world-wide rise of the sea level, is causing the Venetian water level to rise at the rate of three centimetres every ten years.

If all the "high water" factors were present at the same time, and at maximum strength—as could happen any autumn or spring—it has been calculated that the level of the lagoon would rise by 2.5 or even three metres, and Venice would drown.

According to mathematical probability, such a disaster could occur only once every ten thousand years. But a repeat of the November 4, 1966 flood, which submerged Venice for 24 hours under almost two metres of salt water, oil and mud, could happen every 250 years. And "high water" with levels only 50 centimetres less than that of the flood, can come much more often: in fact, on November 5, 1967, a year and a day after the 1966 flood, such high water conditions did occur, without making much impression on public opinion.

Such calamities have always been frequent in Venice's history. But statistics show an extraordinary increase in the number of heavy floods in the last 25 years. None of the aforementioned crisis factors, or even the chronic condition which is causing Venice to sink, can explain this process. One theory is that the recent work carried out in the lagoon, which has led to changes in its original structure, could be partly responsible for this alarming development.

The *aqua alta* is not a high tide,

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The missing steps in Canaletto's paintings

nor is it a freak tide, nor even a freak high tide: it is the result of the more or less normal phenomenon of the tide coming in on top of an abnormal and exceptional rise in the level of the sea.

However, this exception is enough of a rule in Venice for the local language to distinguish between a normal, reasonable overflow from the sea, and the "exceptional" high water which exceeds the usual level and sweeps through the traditional defences, invading the countryside and flooding the ground floors of houses. When the flooding assumes catastrophic proportions, the Venetians ask many anxious questions about how to preserve their city and culture.

According to scientists—geographers, oceanographers and meteorologists—"high water" has numerous causes, and they must all be present to create a catastrophe.

This confluence of unfavourable factors can only be attributed, in the light of present knowledge, to the hazards of nature: it is impossible, at least for the present, to forecast when it will occur. As knowledge of the maritime, lagoon, lunar, atmospheric, and hydrodynamic laws grows, it should be possible to predict dangerous levels of "high water" several hours in advance and, with the help of technology, avoid its more harmful effects.

There is another phenomenon, which in its relentless development, contributes to the insecurity of the inhabitants of the Venetian coastal area. It is caused by a general disturbance of the world's seas in combination with a specific disturbance of the lagoon bed.

THE gradual rise in the earth's temperature—about one-tenth of a degree centigrade per century—is causing a general increase in the level of the world's seas. As the glacial masses melt, the volume of the oceans grows, and raises the sea level along the coasts.

In Venice, the speed of this increase has varied throughout the years; at present, it is estimated to rise 11 millimetres ever ten years. At the same time, certain parts of the Venetian lagoon are settling. Marine tide-gauges show that the rise in the level of the lagoon always exceeds the readings taken elsewhere in the world: in other words, the lagoon is steadily sinking.

The readings have revealed that in 53 years (1908-1961), the officially measured sites had settled between eight and 18 centimetres, depending on where they were located.

Certain archaeological discoveries point to the possibility that the rate of subsidence in Venice has recently increased: old paving stones have been found in the Piazza San Marco which, in relation to the present pavement, show an average subsidence of only about 11 to 12 centimetres per century, instead of the present 30 centimetres.

A study of the works of Venetian landscape artists supports this evidence. In paintings by Canaletto and Bellini, the number of steps showing above the water in front of churches, as well as the tide marks which they reproduced as a greenish trace in the mud on the walls, indicate an average rate of subsidence of 12.5 centimetres per century, when compared to the present position of these marks.

IF, every ten years, the sea rises about one centimetre and Venice sinks by two centimetres, then the water comes closer to the inhabitants at the rate of about three centimetres per decade, or more than 20 centimetres during a normal lifetime. At this speed, the buildings are sinking one storey each thousand years.

Natural and artificial causes are equally blamed for the subsidence of the city and lagoon. The natural causes include deep tectonic phenomena, and the settling of the alluvial and marine deposits on which Venice is built.

The artificial causes excite more discussion, although there is a great deal about them which we do not know. The first cause concerns the diversion of the rivers, blamed for depriving Venice of new alluvial deposits, which could offset the natural settling process.

The second cause involves the excessive weight of the new buildings, which may have accelerated the settling process: ancient Venice was built mostly of wood, but the prosperous Republic was able to import Istrian stone, marble, etc. This "overweight" theory is reinforced by the fact that Marghera, at the height of its industrial development, settled more quickly than San Marco, possibly due to the heaviness of the factories which were built there.

Excessive drainage of ground water from under and around Venice is also a possible cause of subsidence. Water from artesian wells has always supplied the city and the nearby region. But now infinitely greater quantities are being extracted to meet the recent needs of industry on the mainland.

Settling may have also been provoked by drilling for methane gas in the Venice region. This possibility is based on experience in the Po valley where drilling for methane was prohibited after the surface had sunk in some places at the rate of 40 centimetres per year. Similar situations have occurred in the United States and Japan.

The *aqua alta* has been a part of Venetian life since its earliest history. The ancient chroniclers bear witness to the fact that no century was spared its effects:

- 589 "We live neither on water nor land", said the people of Venice, quoted by Diacono in his *Historia Langobardorum*.
- circa 782 "There was so much water that almost all the islands were submerged".
- 875 "The water flooded the entire city, penetrating the churches and the houses".
- 1102 "Earthquake and heavy flooding".

The floods of medieval Venice have been more than matched by those of recent times: in 1960, the water reached a height of 1.45 metres; in 1966, 1.95 metres; in 1967, 1.45 metres.

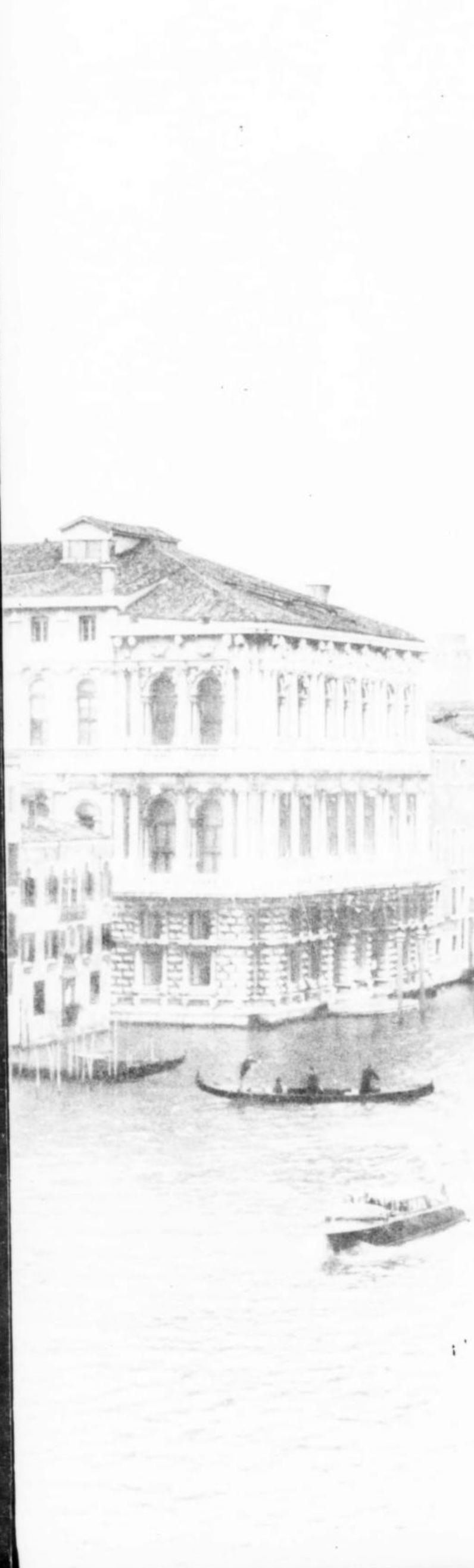
Fifty-eight times in the last century, the waters in Venice have flooded to over one metre above their average level. Of these 58 floods, 48 occurred in the last 35 years, and 30 in the *last ten* years, alone.

These almost chronic inundations, which Venetians have been compelled to accept as one of the less picturesque aspects of their city, are definite cause for alarm, especially because of their effects on the economic and social life of the city.

With the ground floors of houses uninhabitable, constant dampness and interrupted communications, Venetians are gradually moving away from their historic city. And they are not leaving Venice for fear that they will be drowned within the next ten thousand years. They're simply tired of getting their feet wet every day.

Masterpieces of Gothic and Baroque architecture along the Grand Canal. Right, detail of the Gothic Ca d'Oro (see also page 4) and, facing it, the Baroque splendour of the Palazzo Pesaro, a late Renaissance building. While innumerable pigeons grace and animate the Venice scene, they are also responsible for serious damage to the city's monuments (see article page 20).

Photo © Fulvio Roiter, Venice



THE CITY OF TEN THOUSAND

The central doorway to St. Mark's cathedral was decorated in the 13th and 14th centuries by a series of allegorical sculptures depicting the Works of the Months, Virtues and Trades. Photo shows two young fishermen from the group representing the Trades.

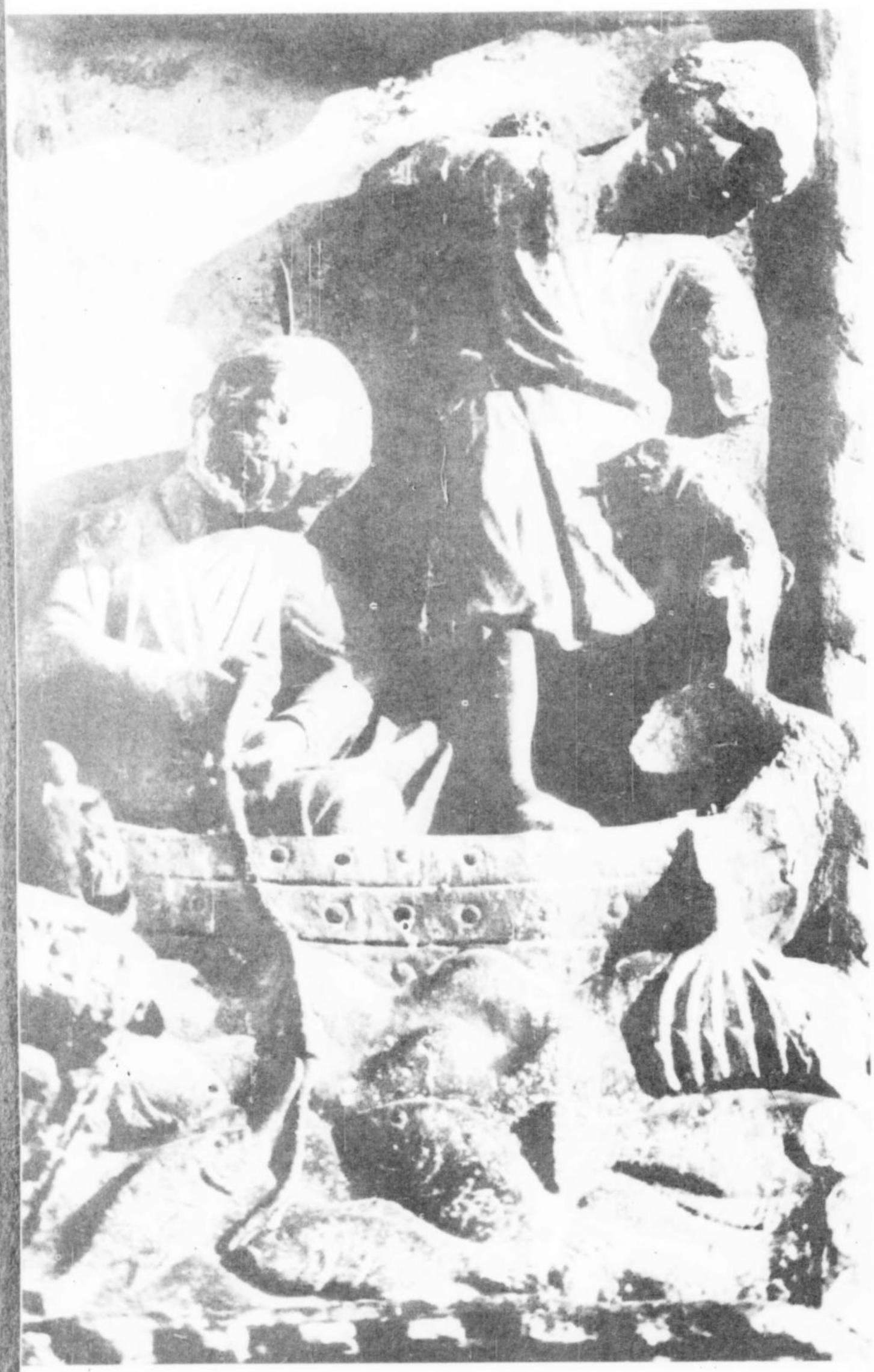


Photo © Giorgio Lotti - Mondadoripress, Milan

by Louis Frédéric

VENICE is falling prey to the harsh fate awaiting all old cities. It is slowly dying of precisely those things it gives life to. The past is being sacrificed to the present to satisfy the requirements of modern life. In place of XVIth century Venice, the Venice Sansovino knew with its orchards and kitchen-gardens, Venice is already little more than a heterogeneous collection of lovely buildings, slums, factories—in other words, a mixture of the sublime and the hideous.

Unless we are watchful, the ceaseless struggle nature wages against the works of men looks like leaning in the former's favour and depriving mankind soon of part of his artistic and cultural heritage.

On a site that was unhealthy at the outset but admirably well-protected, lying between sky and sea, arose the most harmonious artistic and architectural entity in existence, even though this underlying unity may not be immediately apparent at all levels to the hurried traveller.

There is a critical tradition which complacently stresses the variety to be found in Venetian architecture. The fact that whole dynasties of sculptors and builders, such as the Bons or the Lombardis, linked their genius and combined their craft traditions when working in the white stone of Istria or in marble, and that certain complete units were left to the care of a single creative genius—such as Sansovino, who designed the Piazzetta di San Marco at the beginning of the XVIth century—is not adequate to explain the profound unity of Venice.

Chateaubriand, from his vantage point near the granite pillars of the

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MASTERPIECES

Many Venetian sculptors and craftsmen of wrought iron have used a lion's head as a decorative motif for their works. Below, detail of a balustrade on a stairway in the Palazzo Garzoni (see page 12).

Photo © Giorgio Lotti - Mondadoripress, Milan

breakwater, loved to read all about him "those stone chronicles recorded by time and the arts" and to identify at a glance nine centuries of architecture to which all the regions of Italy had contributed.

And, indeed, Venetian architecture may be seen as being made up solely of compromises, of an accumulation of elements from the Italian, Arabic, Byzantine, Gothic, Renaissance and Baroque styles. But therein lies the miracle; Venice as a whole has succeeded in reconciling the apparent contradictions in these various styles.

The disparity, which is particularly noticeable in the uneven lines of the façades, vanishes in the overall prevailing light and in the reflexions of the canal waters that flow beside palaces and houses; a rhythmic repetition of a single theme which, in terms of the city as a whole, restores the unity which may not be found in buildings taken singly.

This basic pattern, founded on three constantly recurring elements—the *rio*, the *ponte*, and the *calle* (1)—by repeating itself over and over and spreading concentrically out from the original nucleus of the Rialto bridge, has conditioned the shape of Venice, and is further emphasized and made more harmonious by restrictions on the height of buildings. This pattern is admirably fitted to the omnipresent element of water with the 180 canals spanned by 378 bridges. Nowhere else in the world is the marriage of stone, sky and water so pronounced.

Whether you are entering the Palazzo Ducale, the Ca d'Oro, a little church or an old house, the impression is the same, though naturally on differing scales. One feels that if a carving were missing from a façade, a fresco from a church, or a balustrade from a house, we should sorely feel the loss, for the absence of a single detail, however small, would destroy that unity that delights us.

And the same applies to the interior decoration, which goes, logically and inevitably, hand in hand with the outside, and is indispensable to the

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(1) Small canals, bridges and streets.

The agony of the martyred stones

artistic balance of the city. Inside we have a series of frescos covering walls and ceilings, stucco motifs along the overhang of upper storeys, trompe-l'œil painting carrying on where stone architecture leaves off, works of Veronese at San Sebastiano, Tintoretto at the Scuola di San Rocco, Tiepolo at La Pietà and the Gesuati, religious paintings as well as decorative friezes —all this is subordinate to the architectural effect and, like it, has a unity and coherence that springs from its very diversity.

Spiritual heir to the San Marco mosaics, the interior decoration of the buildings has always retained something of the ornamental role it had played from the start. This goes back to the rich splendour of the Venetian-Byzantine style, with its brilliant display of marble and gold, for the Venetians held the view that painting should be "above all decorative, a thing for the eye, an expanse of colour on the wall," as English novelist and critic Walter Pater said.

This decoration emphasizes the continuity in the overall look of Venice. Even the pieces of interior decorative art—statues, easel-paintings, pyxes or lecterns—form an integral part of the buildings to which centuries of common history have indissolubly associated them.

The Venetians have, from the earliest times, been concerned with the moods of the lagoon and the periodic variations in the level of its waters. However, as time passes, the cumulative effects of high water result in increasingly great disasters with each successive "flood." Sooner or later, they are bound to affect the very existence of Venice.

Humidity, which was further increased and became more penetrating as a consequence of the "high water" of November 4, 1966, is directly or indirectly affecting all Venice's works of art. In the church of San Sebastiano, containing masterpieces of Veronese, seepage has occurred through the walls up to more than twelve feet above the paving, as well as in the church of the Terese.

The fate of works of art and the future of architectural structures are further threatened by the eroding action of the canal waters which are laying the foundations of buildings bare and submitting the walls to slight but continual vibrations. The living organisms in the water eat away at the piles: salt, which is a strong corrosive, attacks all stonework and is now gradually wearing down what was once raised thanks to the prosperity of the salt industry. Salt crusts that form on the surface of façades, of murals, and of easel-paintings, are a constant worry to curators. But this is not the only threat to Venice's art.

As in all modern cities, there is a great deal of atmospheric pollution, which causes "stone disease" and affects pictures badly. We need only reflect that each year, simply in the nearby small industrial town of Marghera, the quantity of fuel burned releases over 15,000 tons of concentrated sulphuric acid into the atmosphere, from which it returns in the form of rain.

Again, while the pigeons are one of the attractions of the Piazza San Marco, they are also a mortal danger to the city's works of art. Without mentioning the damage caused by their droppings to façades and sculptures, these droppings have throughout the years accumulated dangerously in the roof timbers of the palaces, whose floors are sagging beneath the weight of layers of guano inches thick. At San Moisè, whose roof was blown off by the high winds that accompanied the floods in November 1966, more than ten hundredweight of droppings were found on the back of Nicolo Bambini's "Moses and the Eternal Father" when the picture was taken from the ceiling for restoration.

These are the more obvious kinds of damage that anybody can see. Although their importance should not be underestimated, they should not cause us to overlook a number of

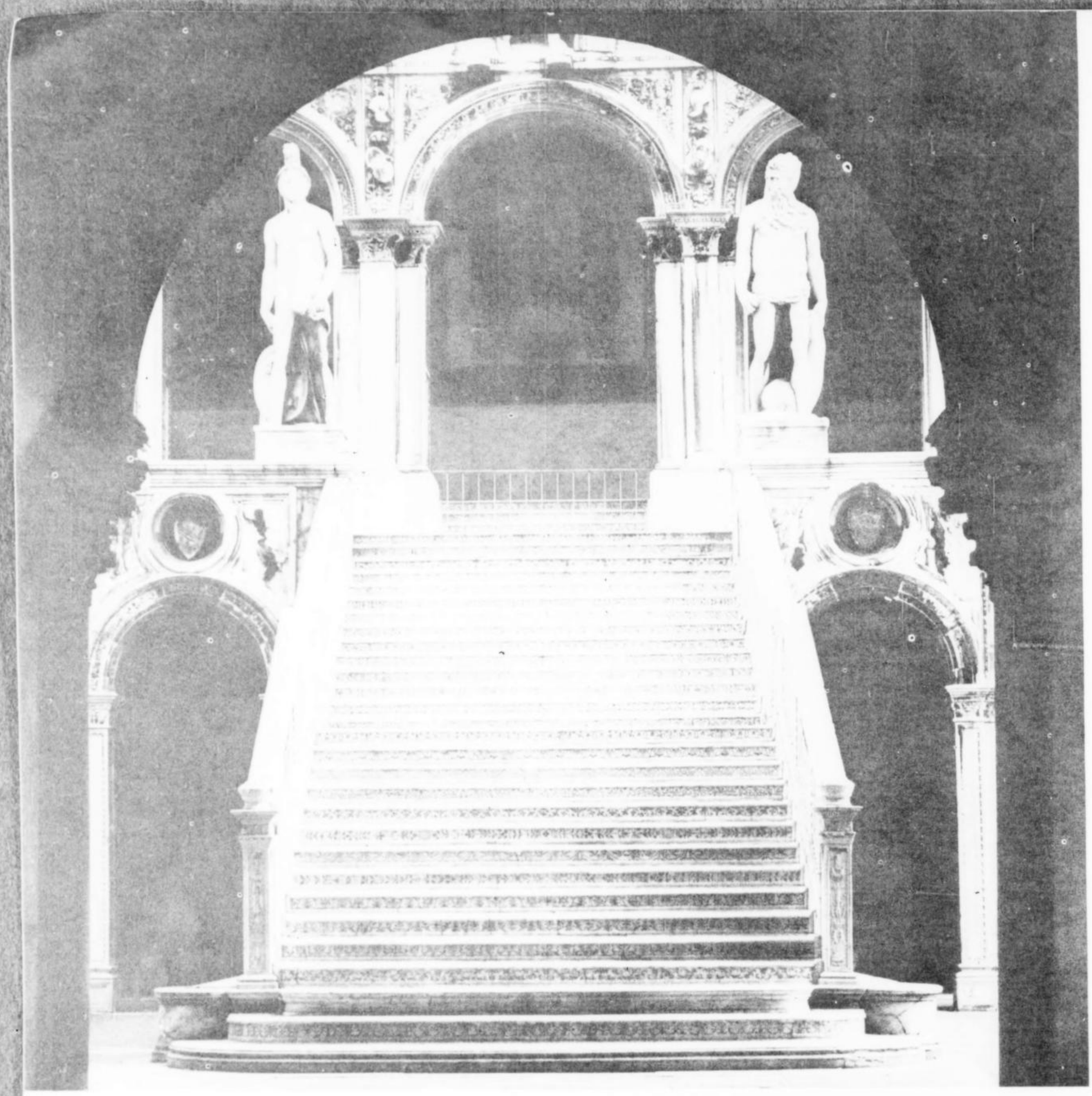
CONTINUED ON PAGE 27

In Venice the streets are footpaths—the city has no automobiles. Here, pedestrians throng one of the stairways that lead to the city's 378 bridges. Venice comprises 180 canals (totalling 45 kilometres) and 150 kilometres of streets, most of them extremely narrow.

Photo © Berenga-Gardin, Venice

The former wooden Rialto bridge over the Grand Canal (see also photos pages 6 and 7) is depicted here by the celebrated Venetian artist, Vittore Carpaccio (1455-1525) in his painting "The Miracle of the Holy Cross". House in left foreground is built in the typical Venetian architectural style of the 15th century.

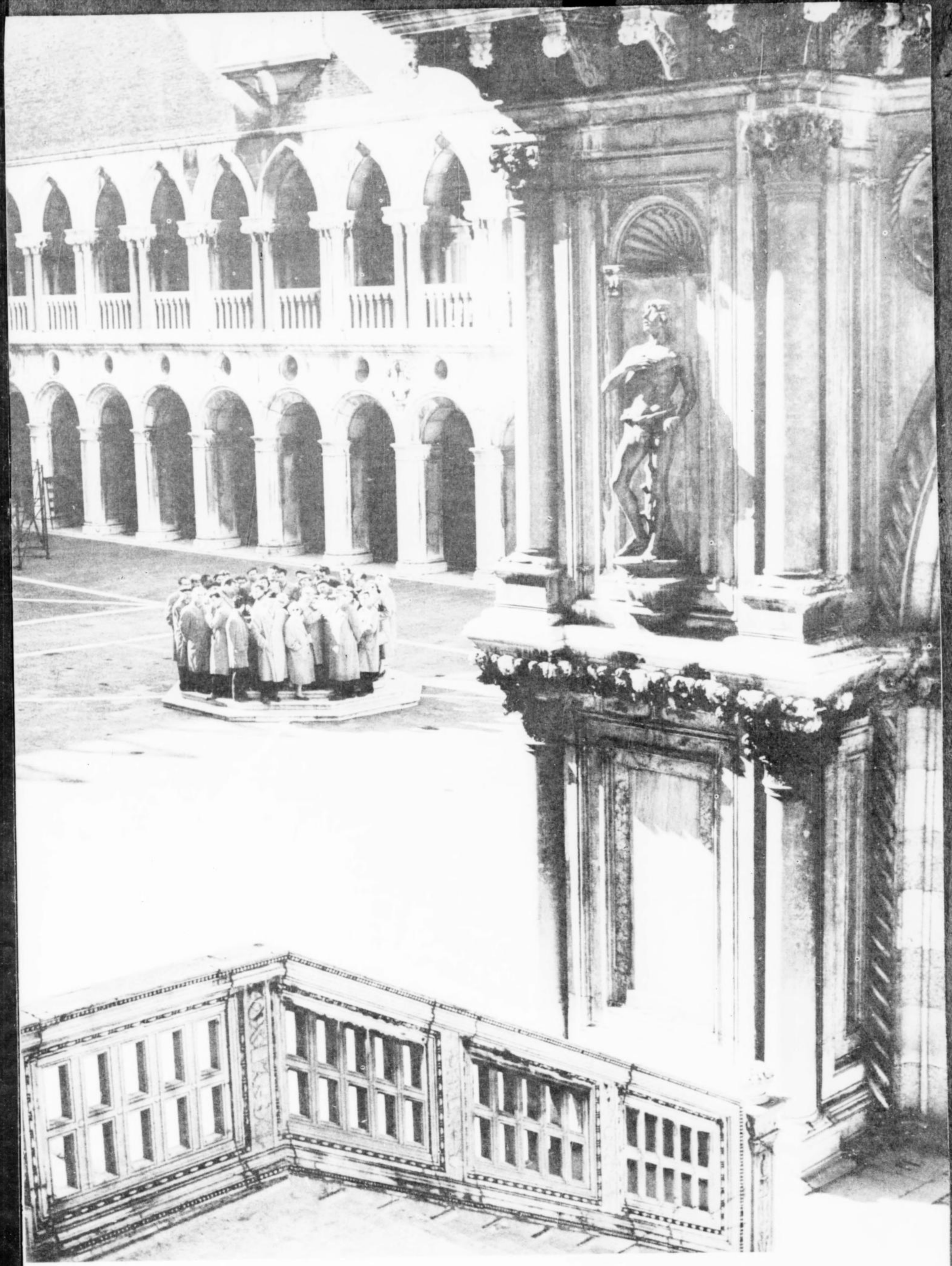
Photo © De Biasi - Mondadoripress, Milan



Symbol of power and prestige

In the courtyard of the Doges' Palace (right) a group of the 1,500,000 tourists who visit Venice each year, admire the striking perspective and proportions of the Giant's Staircase (above) flanked by the powerful figures of Mars and Neptune, sculpted in 1554 by the famous artist Sansovino. At the head of the stairway, each of whose steps is lavishly decorated (detail left), was held the coronation ceremony of the Doge. The Palace was destroyed by fire in 976 and 1105 A.D., but each time rose, Phoenix-like, from its ruins greater and more magnificent than before. It was completely transformed in the 14th and 15th centuries.

Photos © Fulvio Roiter



WHEN TITIAN PAINTED THE WALLS

Venice at the peak of its wealth and renown could call on the greatest artists to embellish its palatial buildings. Master painters such as Titian, Giorgone and Veronese did not consider it beneath them to decorate the outside walls of these noble structures. But today most of these outdoor paintings are damaged or completely effaced. Atmospheric pollution is increasingly responsible for their deterioration (15,000 tons of sulphuric acid are showered over Venice annually by factories at nearby Marghera). This 16th century work by Titian in the courtyard of the Fondaco dei Tedeschi was removed for preservation in 1967. Forty years earlier it could have been saved undamaged.

Photo Unesco - Dominique Roger

Photo © Fulvio Roiter

Venice is sinking three centimetres every ten years. Slipping cornices on the façade of the Palazzo Camerlenghi (left) are warning signs of the dangerous subsidence of buildings and monuments. This palace on the Grand Canal, an outstanding example of Renaissance architecture, once housed the tax-collectors of the Venetian Republic.

450 palaces, 200 churches now threatened

physical-chemical causes and other phenomena whose action is particularly terrible because it is slow and insidious, almost invisible even.

In Venice nothing is spared, not even the bronze horses above the central entrance of the basilica of San Marco. We need only mention certain names, representative of many other similar cases of diseases affecting the whole of Venice:

— there are cracks in the Porta dei Fiori of the basilica and the columns and capitals are liable to collapse any day;

— the Contarini column (XVIIth century) on Murano is crumbling;

— the Gothic sculptures of the Frari are weathering as a result of atmospheric corrosion and are disappearing beneath pigeon droppings;

— mould is growing on the mural paintings (by Fabio Canal) in the church of San Martino di Castello;

— the overhanging triptych and the angels of the Tullio Lombardo altar (late XVth century) and the panelling in the chapels are falling into decay;

— the paintings displayed in church sacristies are blackened and in a pitiable state:

The San Canciano altar-place, Giovanni Bellini's "Madonna" (1507), the "Virgin Enthroned" by Negroponte (c. 1450), the "Saint Nicolas in Glory" at San Giovanni in Bragora (XVth century), the "Scene from the Hebrew Passover" by Pietro Malombra and Antonio Vassilacchi (l'Aliense, XVth century) at San Pietro di Castello, the painted ceiling by Antonio Fumiani (some thirty years' work, from 1680 to 1704) at San Pantaleone, the paintings of Veronese at the Palazzo Trevisano, on Murano, those of Tiepolo, the San Sebastiano frescos.

— the monumental sculptures of the Salute are liable to fall at any moment (one broke away in 1966);

— the Ca d'Oro, Santa Maria dei Miracoli (late XVth century), the church of the Terese...

And the list is far from complete: there are more than 10,000 monuments and works of art in Venice classified as being of historic interest. Each of these sets a problem of its own — sometimes several at once — which must be solved. Nowhere else in the world is there such a high concentration of masterpieces or works characteristic of a particular period or style.

Behind the mask of its charming façades, Venice, when examined closely, is severely disfigured. Corrosion and pollution which may either have begun long ago (when the city was founded in fact) or have started recently, and now often progressing at an alarming rate, are attacking the city's walls and decorative elements.

The unfortunate thing about Venice is that it contains all the conditions bound to bring about rapid and inescapable decay. Venice is gradually subsiding into the mud of its lagoon. Protected from the sea as it is, by its offshore bars, this would not be too serious: a thousand years from now Venice would still be afloat. But even so the hydrographical behaviour of the lagoon must be watched and not disturbed by breaching the bars without proper precautions (as has already been done for the improvement of the Malamocco channel) and an attempt should be made simultaneously to lower the water level by erecting dams.

As regards structural decay and the diseases of stone, the causes have been scientifically identified and the appropriate treatment is known. We have learnt how to fight the formidable "thiobacillus" and the nitrifying bacteria, how to treat the leprosy of marble and granite, how to clean and protect paintings and how to dry and restore frescos.

And yet in spite of that, each year Venice loses 6 per cent of its marble works, 5 per cent of its frescos, 3 per cent of its canvas paintings and 2 per cent of its wood paintings. This is an enormous proportion. At this rate, in thirty years' time there will remain barely half of what makes present-day Venice a "peerless gem." This does not include libraries, archives and craft products or church collections, which are disappearing at a similar rate.

The preservation and restoration of all Venice's works of art set many problems for experts, whether architects, hydrographers or town-planners. Many works have already been saved (canvases have been removed from their supports, rolled and restored, frescos have been dried, houses consolidated, and so on) by the Departments of Monuments and Fine Arts. But there is still an immense amount of work to be done: more than 450 palaces or old houses, more than 200 places of worship and churches are in jeopardy.

Apart from the purely technical aspects of saving this artistic and cultural heritage, there are problems of finance, expropriation, rehousing, taxation, town-planning and administration.

Venice, however, has no wish to be merely a museum. Its population is not made up solely of aesthetes and museum curators. The needs of modern life call for constant improvements in housing, in the setting up of industries (to provide work for the people and to keep the city alive), in transport and communications.

This museum-city, the "città nobilissima e singolare" of Sansovino, does not wish to be behind the times. There can be only one answer to the proposed alternative of saving the stones or saving the inhabitants: Venice must remain true to itself and develop without disowning its past.

Venice without its inhabitants would no longer be Venice. Venice without its monuments and its setting would no longer be Venice. Neither alternative is acceptable. But how can its heritage be saved while respecting the requirements of development? This is the greatest and most important problem for Venice to overcome.

Looked at from a narrow viewpoint, the problems that Venice has to face might appear to be a painful accumulation of natural factors and of human failings. Yet in fact they are simply the result of the gradual evolution of an environment. Man's action takes place against the background of this evolution. To attempt to solve these problems, all the elements of Venetian life must be analyzed, and the skills of specialists in all the necessary branches be combined with those of the Venetian experts.

But co-operation is not only of value for the purposes of study and research: it is also essential in reaching decisions and in making use of the resources made available.

Imagination will likewise be needed, for new techniques will have to be found: techniques to harness the currents without letting the lagoon silt up; to kill the micro-organisms in the water without poisoning it; to counteract the effects of storms without disfiguring the city or the site; to consolidate Venice without having to demolish and then rebuild it; to preserve it for dreamers without thereby losing touch with reality. This will need something more than knowledge or imagination — it will require positive genius. It would be too much to expect this from one man or even from a single group of experts.

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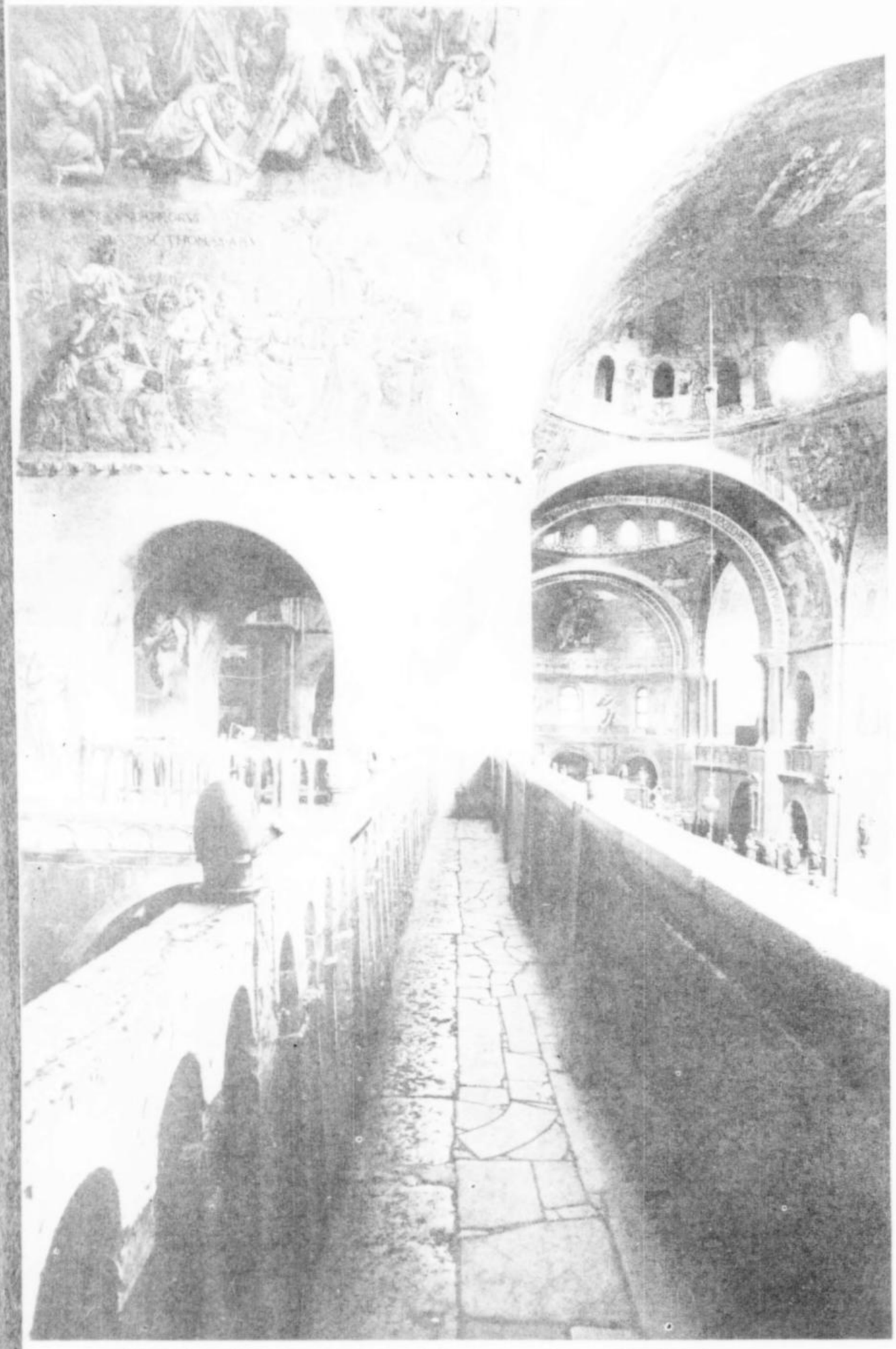


Photo © Fulvio Roiter, Venice

More than 4,000 square metres of the domes, vaults and walls of St. Mark's Cathedral are covered by brilliant mosaics (see also pages 10 and 11). Mosaics, some dating from the early 11th century, are the dominating form of decoration throughout, picturing the story of the Creation, the fall of man and the Redemption, the miracles of Christ and the legends of the saints, all enshrined in a glowing golden background.

Nor is it any use saving marbles and frescos if they are condemned to disappear beneath the waters; nor building sluices without first setting up a meteorological station able to forecast squalls and to close the gates; nor damming the approaches to the lagoon without also building sewers; nor reinforcing foundations if walls are allowed to collapse; nor improving the housing without providing adequate communications; nor building an underground railway system if nobody wants any longer to come to Venice — the Venetians because they find the city uninhabitable and old-fashioned, others because it has been "over-renovated."

If the choice of measures is left solely to curators, they would, no doubt, consider it safer to turn the historical centre into a museum, which will mean the end of Venice, since Venice, for those who love it, is not a lifeless record of a vanished civilization but a place where they like to come and live out their dreams. If, on the other hand, the choice is left to the technocrats, they will rely on "decision theory" and choose the most economically viable solution.

And they may not be too far wrong, either, if it costs a fortune to build dikes, and Venice does not have, or is unable to raise the necessary money. Loans are made only to the rich. The ancient city of Venice must be able to recover its former prosperity if is to avoid the risk of being abandoned to its fate.

Modern constructions must not be condemned, however sacrilegious they are, if they bring prosperity to Venice. Modern civilization is without doubt disturbing the behaviour of the lagoon itself, poisoning the water, filling the air with smoke and spoiling the beauty of the site. But it is also providing the resources necessary to remedy the very damage it causes, though perhaps not in the immediate future, or even perfectly. But the situation is the same the whole world over.

Saving Venice means keeping it intact for the happiness of the men of our time, to ensure that the men of the future can, in their turn, dream; it does not mean relegating it to the realm of mythology.

28 COLOUR PAGES

PAGE 29 TOP. Angels surmounting the pediment of Santa Maria della Salute, the celebrated 17th century church whose great dome towers over the eastern end of the Grand Canal. These figures and other crumbling sculptures of the church have now been consolidated and restored.

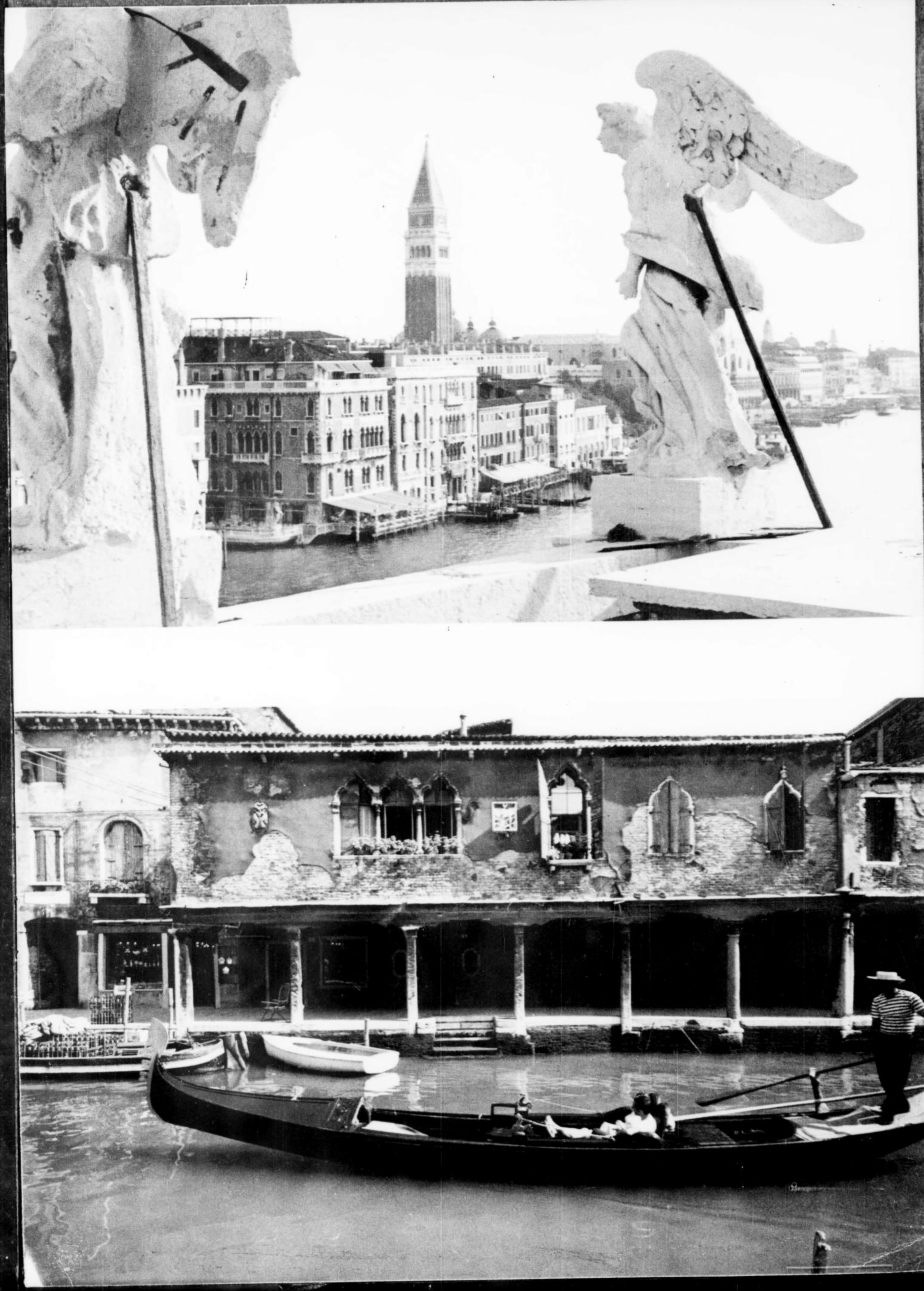
Photo Unesco - Dominique Roger

PAGE 29 BOTTOM. A 14th century Gothic house on Murano, the famous glass-working island, shows signs of the corrosion and decay that has attacked the stonework of Venetian buildings.

Photo © Giorgio Lotti - Mondadoripress, Milan

PAGES 30-31. The Lion of St. Mark, detail of a painting executed in 1516 by Vittore Carpaccio. In background is St. Mark's Square, viewed from the lagoon, with its soaring Campanile and domed Cathedral and, close to the water, the long arcades of the Doges' Palace. Carpaccio's works are a chronicle on canvas of life in early 16th century Venice.

Photo © Giraudon, Paris



The saints go marching on

Despite the vigilance of its Fine Arts Service, Venice suffers the loss each year of 5 per cent of its frescos and between 2 and 3 per cent of its paintings on wood and canvas. Damp and salinity add their ravages to those of old age. Opposite, far left, one of many rescue operations carried out on fading, damaged paintings: the famous work, "Glory of the Saint", by the 18th century Venetian painter Piazzetta, decorating the ceiling of the church of SS. Giovanni e Paolo, the most outstanding example of ogival religious architecture in Venice. Left, from top, three of the twelve apostles depicted on the 15th century polyptych which decorates the High Altar in St Mark's Cathedral. Shown here are Andrew, Bartholomew and Mathias, the successor of Judas. The complete polyptych, today restored to the Cathedral, is seen above during its restoration in an art laboratory of the Soprintendenza alle Galleria$_E$ in Venice. Right, a 14th century painting of the Virgin being restored in the same workshop.

Photos Unesco - Dominique Roger

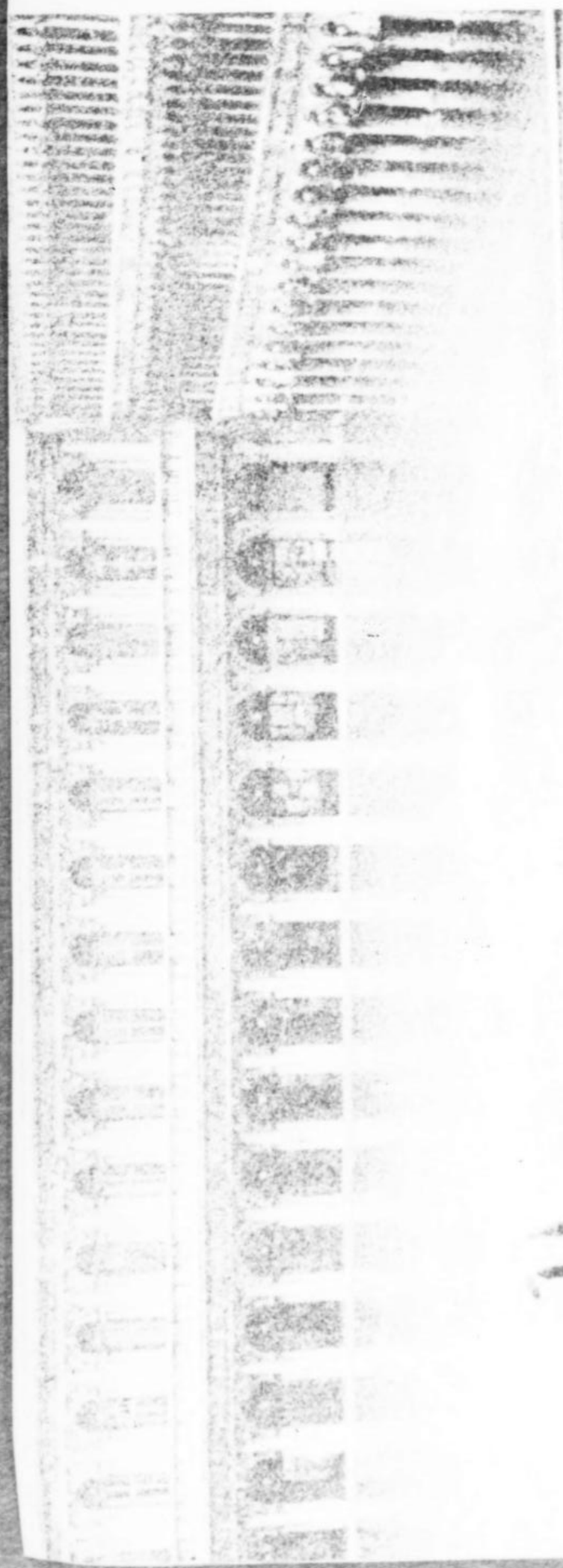


Photo © Gianni Berenga Gardin

VENICE AND THE VENETIANS OF TOMORROW

VENICE is dying—and not only because the ground is sinking and the sea rising, the trees decaying and the frescos fading. The buildings, too, are slowly falling into ruin, exuding the death smell of places long uninhabited.

The insular situation that was once the strength of Venice has become, with time, a serious handicap. Over the last two centuries the city has gradually been deprived of its functions, first as a State capital, then as the regional capital. While its rivals in northern Italy were developing with extraordinary speed, the former Queen of the Adriatic seemed to have missed the turning that led to a modern economy, and to have been immobilized within the confines of an island grown too small. From being a community of big land owners, merchants and lawyers, it gradually became a city of clerks and civil servants.

Losing their importance in a world where industrial production is a prime requisite, yet without becoming really impoverished, the old aristocracy has suffered, since the fall of the Republic right up to the present day, from a sense of having come down in the world. Hence the temptation to withdraw more and more, systematically keeping up the traditions of an illustrious past and rejecting everything new.

"Venice," wrote Mary McCarthy, "has always been a foster-mother to the old." People might go to Venice to die, but they die at an advanced age. Titian was a hundred years old at the time of his death, and even then he succumbed only to the plague. Even today, "it's a good place to grow old in," say the senior citizens of Venice, whose age it is impossible to guess.

Venice's population statistics show that, between 1871 and 1951, the population doubled. But it should be noted that these figures refer to the whole commune of Venice, which includes not only the historic centre and the islands of Murano and Burano, but also the estuary and the mainland, with Marghera and the old neighbouring communes attached to the former Venetian Republic. During this same period, while the population of the mainland rose by 481 per cent, and that of the Lido and Malamocco by 654 per cent, the population of the old historic centre rose only at the modest annual rate of 1.2 per cent.

But from 1951 onwards the situation altered completely. While the population of the mainland and the estuary has continued to rise, that of the islands is steadily falling. The area comprising Venice proper and the islands of Murano and Burano shrank from 191,200 inhabitants in 1951 to 135,900 in 1966, representing an average loss of 3,500 inhabitants a year.

OVER the last ten years the total population of the commune has increased by 31,000 while the old town has lost nearly 40,000 inhabitants. Were this loss of population to continue at an average rate of 2,000 inhabitants a year, the old part of Venice would have no more than 97,800 inhabitants by 1981—in other words it would have lost over half its population in thirty years. There would be more old people than children and more women than men.

Forty-four per cent of those leaving the city centre are under thirty and 71 per cent under forty-five. The emigrants therefore come mainly from the younger sections of the population. The effects of the aging of a community on its economic capacities are only too well known. The proportion of inactive old people to those gainfully employed was 13 per cent in the island centre in 1951. Today it has risen above 19 per cent.

Where do the Venetians go when they leave the old city? Seventy-eight per cent stay in the commune and settle on the mainland or at the Lido. Today in 1968 about two out of three Venetians live outside the island centre either on the mainland or on the coast.

The number of jobs in the islands has not decreased in the last fifteen years. Whereas there has been a falling off in employment in all branches of the primary and secondary occupations (agriculture, fishing, industry and the building trade), the tertiary sector (commerce and services) has increased in importance. The most noticeable development has been in the retail trade, the hotel industry, banking and insurance, and various types of services. This increase is due mainly to the development of the tourist industry.

More foreigners go to Venice in July, August and September than during all the other nine months put together and this seasonal concentration necessarily has a prejudicial effect on its economy.

Moreover, as is well known, Venice has to contend with serious competition from neighbouring resorts. The city has too few hotel rooms in summer; more than half its hotels are closed in winter. The improvement of hotel accommodation obviously depends on the flow of holiday makers being spread over the whole year. And it is unrealistic to hope that investments will be made while the hotels are full only three months in the year.

Contrary to popular belief, the tourist trade is not Venice's main source of income. Its traditional crafts, and the activities of its commercial port have an equally important place in its economy.

At first glance, the development of sea traffic gives no reason for concern. But the prospects are not very reassuring. For 1,000 years, Venice has been one of the most active ports in the world. But today the port of Marghera, on the mainland, is the principal industrial port. Whereas the capacity of the old city's port is 1,800,000 tons, that of the new town is 15,000,000 tons.

Half the economic activities of the Venetian commune as a whole are linked with port activities. In the old city itself, the livelihood of 20 to 30 per cent of men with families depends on jobs connected with the port. If the future of the historic centre as a port were to be endangered, its demographic and social future would surely suffer, for a very large proportion of its population would be affected by this economic transformation. So it is understand-

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In the last ten years the population of Venice has dropped by 40,000. One explanation for this exodus is that Venetians "are fed up with getting their feet wet every day" as a Unesco report states. Left, pedestrians make their way over a causeway of planks laid across the flooded Square of St. Mark's.

Behind the lovely facade—a mass exodus

able, that many Venetians choose to make their living on the mainland.

As the number of jobs in the island centre has increased since 1951, and the number of "employable" people has gone down, there are at present more jobs in the city (about 12,000) than there are people to fill them. It is the first time in their history that the islands have been short of manpower.

It is not therefore because they cannot find work that Venetians are leaving their ancient home. Nor is it because they earn less there than elsewhere—wages are higher in the old town than on the mainland, which is why Venice manages to bring in from outside, every day, the 12,000 extra workers that it needs. The main reason for the gradual depopulation of Venice is the housing situation.

When the exodus began in 1951, it was estimated that Venice needed 16,500 new dwellings, apart from the renovation of existing buildings. Instead, only 2,700 homes were built between 1951 and 1961. In the meantime, over 6,000 families, tired of the conditions in which they were living, left Venice.

While the rate at which habitations were being put up grew steadily slower, the depopulation of Venice continued. Repairs and improvements to old dwellings practically ground to a halt.

By 1966, the situation was completely reversed: only 40,000 families remained in Venice, and there were too many flats. Venice became, in this respect, one of Italy's most privileged cities. One would think that people would be glad to live there—but they are not. For, compared with the general European standard of housing, Venice is definitely underprivileged.

A survey made in 1957 showed that conditions were as deplorable as regards both the structural repair of the houses and their sanitation and habitability. Sixty-six per cent of the housing blocks required major repairs. Nearly 40 per cent of the dwellings were either uninhabitable or overcrowded. Seventy-five per cent of the flats had no bathroom. Central heating was practically non-existent, and in 60 per cent of the dwellings the kitchen was the only source of heat.

Besides all this, there were the disadvantages of poor natural lighting, dampness and the general inconvenience of the premises. Rents are also higher than anywhere else in Italy, and maintenance and repair services are very costly because of the city's communications problems and difficulties in transporting materials.

All this is not calculated to encourage people to remain in the old city. The young complain about the lack of recreational facilities, when the space for sports grounds could easily be found. Venetians accepted such living conditions for centuries, because they were no worse than elsewhere. But they are worse now, since new towns have sprung up everywhere and the discrepancy between housing facilities in island Venice and on the mainland has recently become greater. It is the houses of Mestre and the Lido, commonplace but comfortable, which for fifteen years have been attracting so many Venetians.

The basic problem, therefore, is that of restoring, improving and modernizing existing dwellings. It is not enough merely to save the palaces and mansions from destruction; it is equally urgent to make the town

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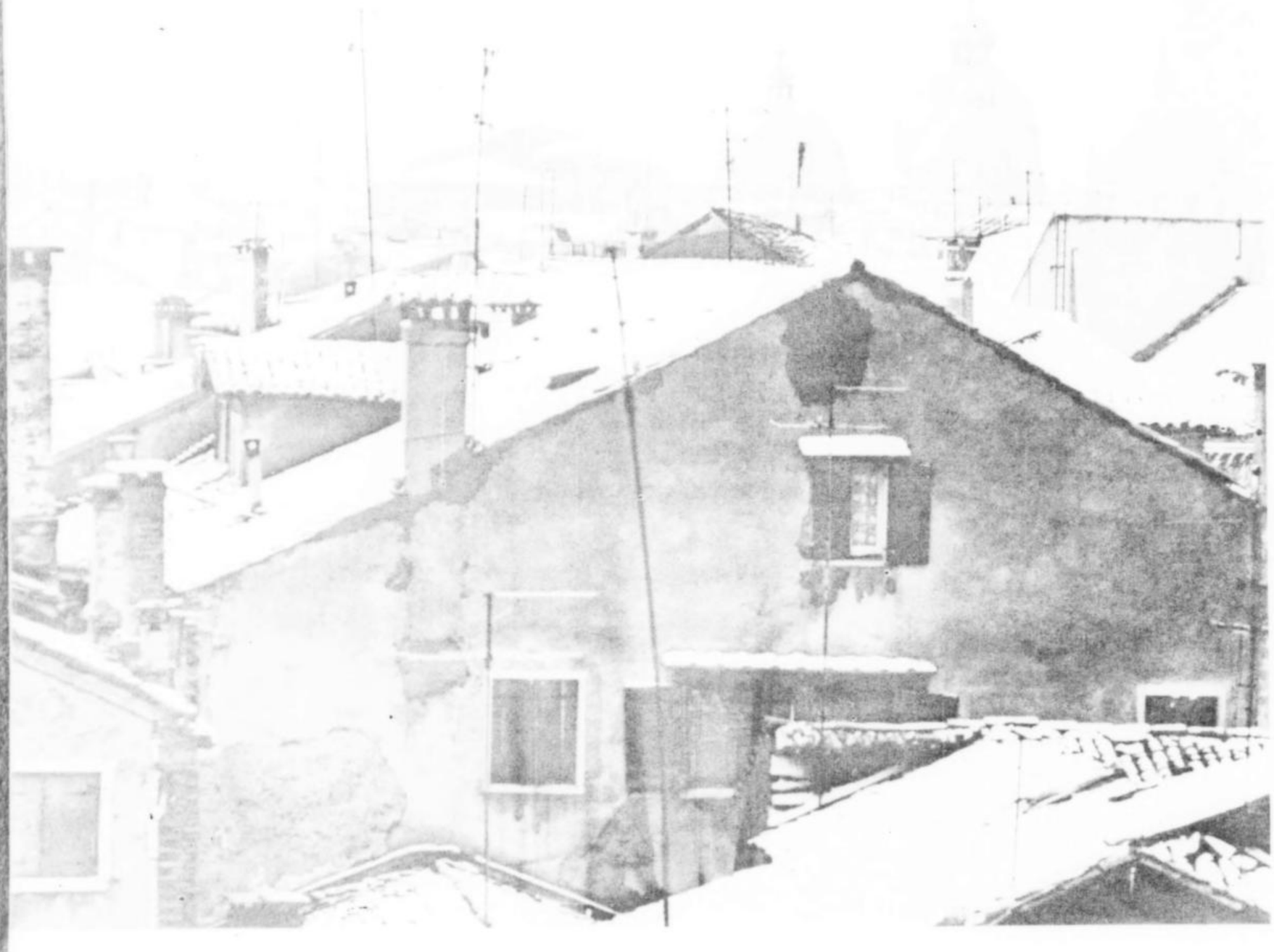
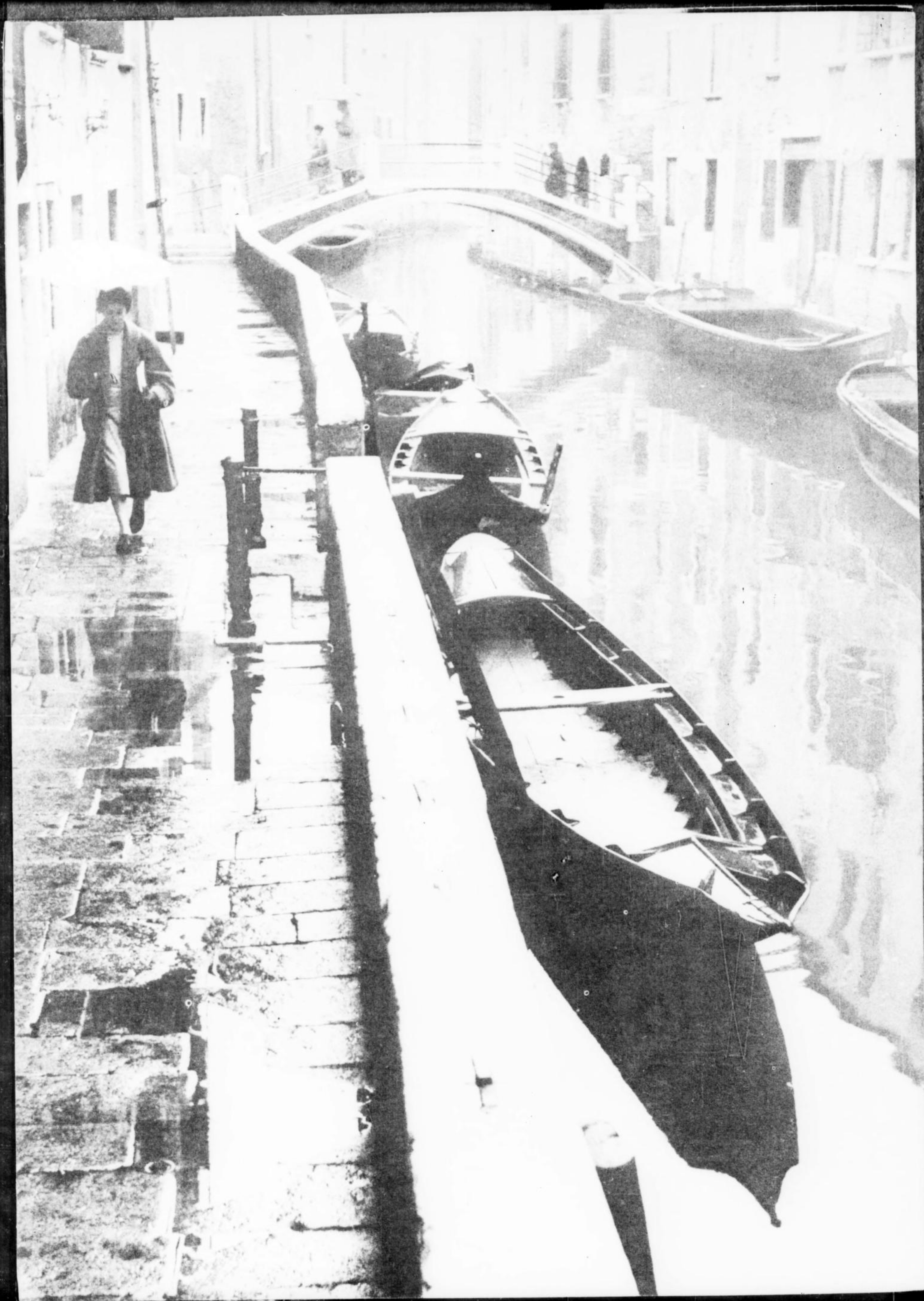


The peace and tranquility of its narrow canals (right) and the poetic vista of its ancient tiled roofs covered with snow belie the everyday problems of Venice and its people. According to the special study made by Unesco, 47 per cent of Venice's buildings are in need of repair, 16 per cent are gravely dilapidated and 50 per cent are damp-infested. The renovation of housing in Venice is an urgent task, but the cost will be enormous.

Photos © Fulvio Roiter



Building the new image of Venice

habitable, not only for its citizens, but also for the visitors it is seeking to attract.

For several centuries Venice has been a weary city, but she has never given up the struggle. The people are used to seeking for ways and means of making up for the loss of traditional sources of income wherever they are to be found.

Obliged to offer services which could not be found elsewhere Venice finally adopted, in 1917, a formula which was then new to Italy: that of the industrial port. The idea, to quote the originator of the project, was "to bring ships to the factory doors."

Instead of being, like a merchant port, a place where goods are kept in bond or in transit, the new port was to be a vast complex of factories. And so Marghera was created. This new Venetian town was not built on the mainland proper, but on 550 hectares of *barene* (sand-banks) reinforced with soil from the lagoon bed and raised to a height of some eight feet above sea level. Factories were being set up even before the port was finished.

The pressure of expanding industry soon forced Marghera to breaking point, and a second industrial zone was begun, now to be followed by a third, much more ambitious than the other two. The ground on which the third zone will be built is still being consolidated. The new industrial, commercial and oil ports will not be functioning fully until 1980. But there are already 211 companies in Marghera employing 40,000 workers.

HAS the old town benefited appreciably up to now from the progress made by industry on the mainland? The increase of traffic in the port does not affect it, as this consists mainly of supplies for industry itself, and of oil, the unearned increment on which goes to foreign investors. The municipal budget has derived hardly any wealth from the mainland.

The new town costs the municipality more than it brings in, and improvements needed to schools, the road system, public transport and cultural amenities would cost quite as much as the restoration of the historic part of the city.

As a result, Venetians on both sides of the lagoon complain of having to pay heavier taxes than the inhabitants of other large towns. The modern town was to be a fine example of town-planning. It is nothing of the sort. The traffic jams and parking problems in Mestre are enough to make the inhabitants pine for the quiet *calli* of historic Venice. Water and electricity supplies and the drainage system present problems as complex as those of purifying the water of the lagoon, and the mainland itself is periodically threatened by floods. The destiny of Venice is indeed difficult to shake off!

Legislation has it that the islands and the mainland form a single commune. But the necessary intercommunication between the old city and the mainland still has to be established. The Venetians hardly know where their city begins and ends. When we speak of the depopulation of Venice, we are not thinking of the commune, since its population is increasing; and when the inhabitants of Venice go to live in Mestre, they have the feeling of moving, not to another district, but to another town. The mainland is another country, another way of life, another society.

Business concerns recognize this. Banks, insurance companies and department stores know they would lose customers among the mainland population (that is, two Venetians out of three) if they did not open branches in Mestre, pending the transfer of their headquarters there.

It is not only the people on the mainland who feel they belong to a different world. Most of the Venetians in the old town feel that the industrial development of Marghera does not concern them. The initiative of the money, the organization and the staff of this industrial complex come from Milan, they say, and the products are not sold in Venice to the Venetians but in Milan to the Milanese. Nothing can convince Venice that the development of the mainland will not in the end continue independently of the old city, and even at its expense.

However much goodwill they show, Venice and the mainland are bound to separate sooner or later, unless the island centre really needs Marghera, and vice versa.

Cities everywhere in the world are trying to decentralize their activities and divide up work among their different districts, so as to solve zoning problems. They all aim at becoming "polycentric." Venice already is.

Better housing and easier and faster means of communication are what the Venetians most often demand. Some innovators have proposed various solutions to the water-traffic problem: "waterbugs" (silent, electric mini-taxis), amphibious buses and hydrofoils; but the effect of the waves set up by such powerful craft would probably be disastrous for the city's ancient buildings.

Land transport has been, and still is, the subject of heated argument. Some say that a new bridge must be...

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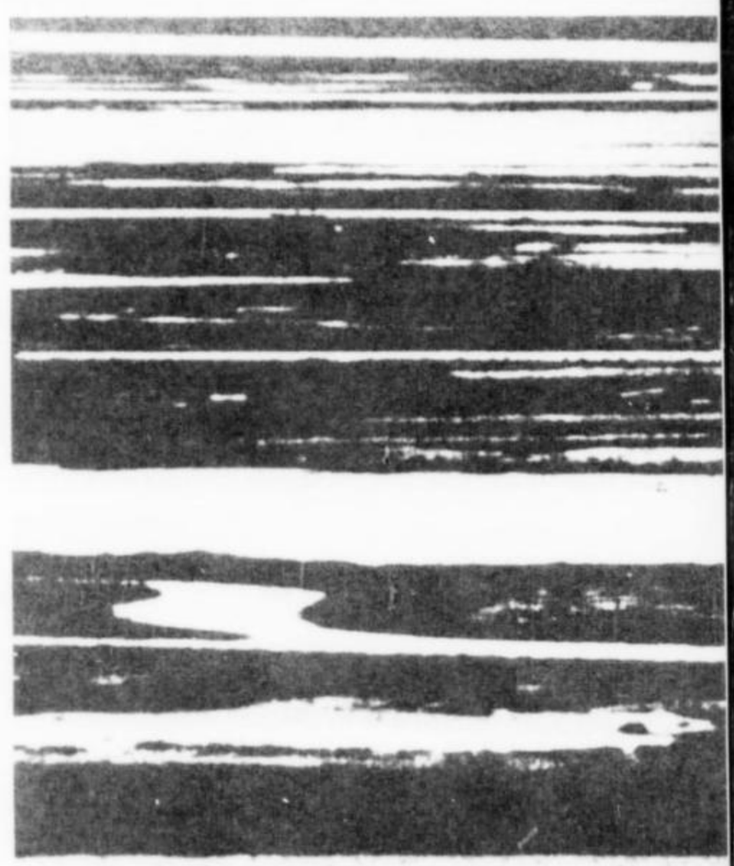

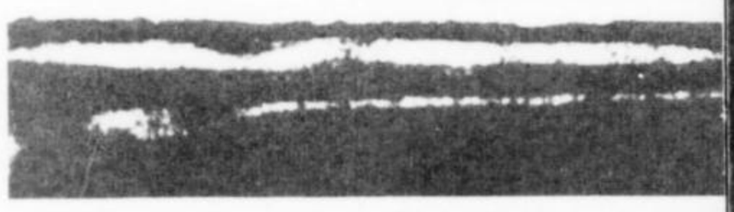

UNDERWATER

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UNDERGROUND

Photo © Cameraphoto, Venice

Problems of urban communication and the high cost of transporting building materials are serious obstacles to the upkeep of buildings in Venice, which are falling into disrepair (right, portico of a house which has tumbled into the San Severo canal, now closed because of such hazards). The 40,000 families who live in Venice would like to see an improvement in their housing and also a modernization of communications within their city and with the mainland (above, a boat follows the twisting channels between the marshy banks of the lagoon which appear at low tide). Plans are being studied for an underground railway to link the various parts of the city and to connect with the mainland (top left, model of the underground as it would run beneath the Grand Canal). Bottom left, seaborne railway wagon passes the island of San Giorgio on its way to the centre of the city.

VENICE
LINK BETWEEN ORIENT & OCCIDENT

by ***Marcel Brion***
of the Académie Française

On the façade of St.Mark's Cathedral, four colossal bronze horses (detail right) stamp their hooves on a platform overlooking the great square. They have reached Venice after a long odyssey. Probably Greek in origin, they once surmounted the triumphal arch of Nero and later that of Trajan in Rome. They were taken to Constantinople by the Emperor Constantine in the 4th century and brought from there to Venice by the Doge, Enrico Dandolo, in 1204. Napoleon Bonaparte installed them in Paris in 1797, and in 1815 they were returned to Venice.

Photo © Oswaldo Böhm - Museum Correr - Venice

THE GREAT DOGE LOREDAN. Several versions exist of this famous portrait of Leonardo Loredan (1438-1521), Doge of the Republic of Venice. One painting hangs in the Museo Correr in Venice; another in the Academia Carrara at Bergamo; a third in the Dresden Art Gallery; and a fourth in the Museum of San Francisco, U.S.A. Painted in 1501, the work has been attributed to Carpaccio or to Giovanni Bellini. But there can be no doubt that it was painted by a great Venetian artist.

AT the time when the Huns, following their unsuccessful attempt to invade China, were turning their predatory ambitions westward, abrupt and violent movements of peoples occurred, setting off what is known in German as the "Volkerwanderungen", the Great Migrations.

From Central Asia to the Danube and the Rhine, Teutons and Slavs, retreating in confusion before the onslaught of the Huns, drove one another from the lands of their ancestors and, drawn by the fascination of the South which has always stirred Nordic peoples, crossed the great river barriers and made their way down to France and Italy.

The shores of the Adriatic and the hinterland, which was linked to them politically and economically, were inhabited by the Veneti, who had begun to take advantage of their easy access to the sea by fitting out small fleets of merchant vessels, and when necessary, of warships.

When they were overtaken by the influx of migrating Teutonic and Slav tribes, who had been driven from their homelands by the Huns, the Veneti found that their best hope of safety lay in retreating to the thickly-scattered islands in the lagoon formed by the delta of the Po.

CONTINUED ON PAGE 42

MARCEL BRION, *member of the Académie Française and art historian, has written authoritative works on the Italian Renaissance and German romanticism. His work "La Resurrection des Villes Mortes" (Ed. Plon, Paris, 1959), translated into most European languages, is considered one of the great classics of archaeology. Its English edition, "The World of Archaeology,", was published by Elek, London (two volumes, 1962), and by MacMillan, New York (1962). Other works by Marcel Brion in English translation, are : "Romantic Art" (Thames and Hudson, London, 1960; McGraw Hill, New York, 1960) and "Leonardo da Vinci" (Heinemann, London, 1955).*

Photo © Brian Brake - Rapho

City of mariners, traders and artists wedded to the sea

The ship carrying St. Mark the Evangelist reaches Venice, depicted as two tiny islands with four trees in this 12th century Byzantine mosaic from the Cathedral of St. Mark.

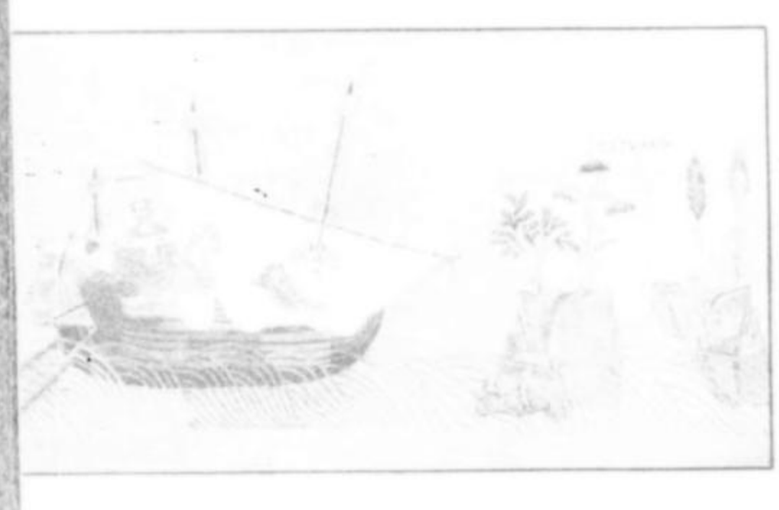


Photo © Osvaldo Böhm, Venice

Down the centuries the master glass-makers of Venice have won renown for the technical and artistic perfection of their work. In 1292, owing to the danger of fire, the glass furnaces in the Rialto district were removed to the island of Murano, still a flourishing centre of the art today. This eleventh century engraving shows a Venetian craftsman blowing glass.

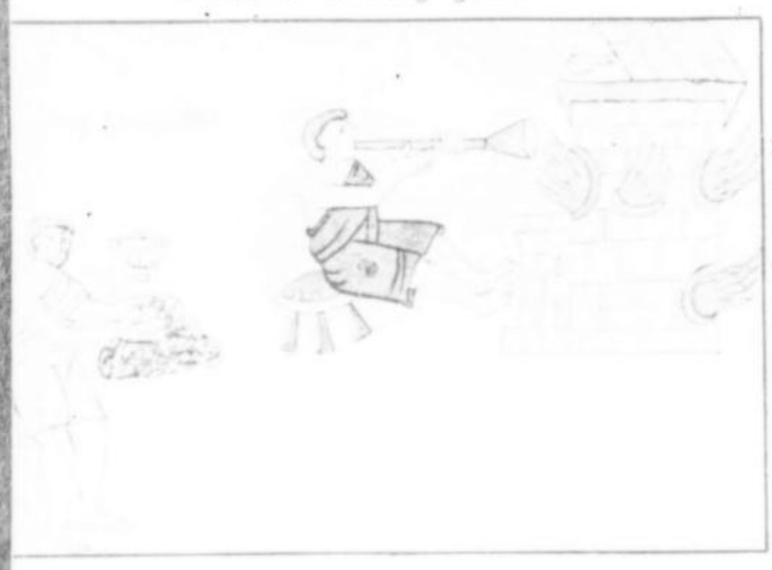


Photo Galleria Querini Stampalia, Venice

The "barbarians," excellent horsemen but not seafarers, out of their element when they were not in the saddle, were forced to abandon the pursuit and leave the Veneti at peace in their island retreats. The limestone mountains walling in the hinterland of the Venetian States had been no obstacle to the hordes of Attila or his Teutonic and Slav allies; but water was an impassable barrier to peoples who could neither build nor handle boats.

Thus, secure from invasion in their new homes on the islands of the lagoon, the inhabitants of Aquileia, Altinum, Concordia, and Heracleia energetically developed a civilization based originally on trade in salt—abundantly provided by the still waters of the lagoon—and on fishing.

New towns such as Torcello, which had a population of 20,000 but flourished only for a brief period, and Venice, smaller but destined to a glorious future, acquired economic importance from the advantages of being situated on islands, free from troublesome neighbours, and able to devote themselves to trade at a time when the major mainland States were continually being shaken by serious political crises.

ISLAND civilizations born and developing under such conditions rapidly rise to prosperity and fame which, because they are impregnable to threats from any quarter, enable them in turn to impose their preponderant power and influence.

Crete, the centre of the great Aegean civilization, acquired the mastery of the Mediterranean and imparted her culture to the peoples living around it; England, never invaded since the Battle of Hastings, when the Normans established their footing on English soil, early developed an imperial rôle; Venice became Queen of the Adriatic in the early Middle Ages, first with the consent of, and later in opposition to, Byzantium.

All these are examples of what can be achieved—given the two balancing factors of favourable geographical "isolation" and considerable overseas expansion—by nations of bold seafarers, astute traders, and statesmen skilful both in using strong trading links as a basis for building up the diplomatic relations which help to stimulate trade, and in using trade itself, with the wealth it commands and confers, to establish trading posts, open up spheres of influence, and impose overt or hidden forms of protectorate and colonization on nations which earlier had opened their doors to them and become their trading partners.

Within the narrow limits of her archipelago, with its little islands linked by bridges, Venice soon grew rich through her self-conferred monopoly in salt. Later she spread a network of sea-routes throughout the Mediterranean, conducting an active import-export trade between the European States, Africa, and Asia Minor.

EVEN after she acquired prosperity through the glass and silk industries, her rôle remained essentially that of an intermediary; she had agents in Bruges, Antwerp, Amsterdam, London, Bremen, Florence and Genoa; she received manufactured goods from France, Germany, the Low Countries and England, and carried them to all the Mediterranean ports, where her merchants had special concessions and even districts reserved for them, enjoying privileges of self-government and extraterritoriality.

Steadily pursuing this policy, governed solely by considerations of free and fruitful trade, Venice intervened in the quarrels of the Italian States and their neighbours only so far as necessary to prevent the free circulation of goods and money from being impeded by wars, profitable only to arms-makers and the *condottieri*, or professional military captains, and producing catastrophic disturbances for importers and exporters.

Her own overseas trading posts were miniature Venices, forming enclaves in other countries, and the Venetian Republic likewise placed at the disposal of Turkish, Greek, and German merchants trading near the Rialto, buildings, known as *fondachi*, from the Arab word *fondouk*, where they had their dwellings, offices, and warehouses, all free from local police jurisdiction. The Greeks and Dalmatians similarly had their *scuole*, or guild halls in which to hold meetings, perform their religious rites, and administer the property of their trade-guilds, which remained entirely independent.

The constant osmosis thus going on between the Venetian Republic and the European and oriental nations with which she traded made Venice the most cosmopolitan city in the world, where every language could be heard in banks and shops, and where any traveller could walk about in his national dress without surprising anyone.

Art and culture also benefited from the fruitful contributions lavishly bestowed by foreign civilizations: first Byzantium, which long dominated Venice both aesthetically and politically, then Pisan and French sculpture, German, Dutch and Flemish painting, with that piquant touch of the exotic which was also to be found in Aegean art at the period when the Sea Peoples were settling in Egypt and the influence of Crete was beginning to be felt on the mainland at Argos and Mycenae.

The symbolic "wedding of the sea", renewed year by year by the Doge on Ascension Day, significantly perpetuated this long-standing alliance, imposed by geography, between the great merchant city and the element which favoured the movement of trade. Casting his gold ring into the sea from the gilded State barge, the Bucentaur, the Doge would say, in Latin, "Desponsamus te, Mare, in signum veri perpetuique dominii." (We espouse thee, oh sea, in token of our real and everlasting dominion.)

MARCO POLO VENERATED IN THE TEMPLE OF THE 50 GENIUSES

Marco Polo's epic journey lasting 24 years, which took him across the face of Asia and back again to Venice, and the account he wrote of the kingdoms and marvels of the East in "The Book of Ser Marco Polo" have won for this enterprising Venetian a place in history as one of the most illustrious travellers of all times. He left Venice in 1271 and arrived back in 1295 (above, an impression of Venice at that time), after making known in the heart of China the renown and splendours of his native city. Below right, an 18th century copy of an effigy of Marco Polo venerated in "The Temple of the 50 Geniuses" in Canton (China). The first printed edition of Marco Polo's book was published in Nuremberg in 1477. Below left, an impression of Marco Polo by a 15th century engraver, which appeared in the book.

Photos © Mondadoripress, Milan

As with everything subject to the vicissitudes which affect the lives of States, this everlasting dominion over the sea, celebrated by the yearly marriage, dwindled through the centuries into a mere fiction. Increasingly frequent European wars severed the trade relations between the Adriatic and the northern countries; in Italy itself, ports such as Genoa or Pisa contested and tried to wrest from the Venetian Republic her ancient hegemony; pirates, fitting out whole fleets, attacked and pillaged the squadrons of Venetian merchantmen, in spite of their convoying warships.

The growing power of Spain, France, and the Holy Roman Empire gradually eroded Venice's political prestige until she no longer held her former place of honour in the concert of great powers. The French invasions cost her the Romagna region, Apulia, and the control of the southern Adriatic, which passed to the Pope. She had no territorial ambitions in Italy and true to her trading interests, she intervened in European affairs only to keep

CONTINUED ON NEXT PAGE

To thine own self be true...

open her mercantile communications by land and sea.

One by one her Mediterranean possessions slipped from her grasp during the sixteenth and seventeenth centuries: the Morea region of Greece, Cyprus, Crete and her other key island possessions. Islam and Spain rerouted the trade in spices and other oriental merchandise which had brought wealth to Venice.

THE Portuguese were also dangerous competitors, and it was with the idea of resisting them that an ingenious Venetian suggested to the Senate that a canal might be cut through the Isthmus of Suez to link the Mediterranean directly with the Red Sea and India, thus securing the "route to the Indies" which in later times was to be one of the major aims of British policy. But, as a magistrate sadly acknowledged at a meeting of the Senate on July 5, 1610: "We have lost all our trade, and the sea routes of the western Mediterranean, and the routes of the Levant are now used only by a few companies, liable to financial loss, short of ships, and steadily growing weaker."

How was it that Venice, notwithstanding her political and commercial decline, preserved her rôle as a great international city, a focus of world intellectual activity? At the risk of appearing paradoxical, it must be admitted that what saved Venice was her carnival. The Venice carnival lasted six months, from the first Sunday in October until Lent. Unbridled pleasure reigned, with disguises and masks providing cover for every kind of licence and extravagant behaviour.

When Voltaire describes the meeting, in a tavern, of exiled kings come to Venice for the carnival, he gives a farcical but true example of the extraordinary attraction exercised on the whole of European society by a city where pleasure was so easy to come by and so benevolently authorized by custom and law.

Taking part in the Venice carnival had become almost a social obligation for distinguished society, as also for the less distinguished, and indeed doubtful, company of adventurers of every race and colour, who thronged to Venice and under cover of the mask, committed their misdeeds with impunity.

There too were the charlatans, magicians, esoterics and cabalists who swarmed the capitals of all countries in the eighteenth century. Representatives of every nationality, including turbaned Arabs and brightly robed Moors, jostled each other in the gaming rooms, or *ridotti*, which were decorated with the utmost refinements of splendour by the fashionable artists of the Republic.

Foreigners in search of subtler

With the start of the 14th century, the genius and character of the arts which had always been an inherent part of and profoundly influenced the life of Venice flowered anew. The traditional association of Venice with the arts is reflected in this detail of an 18th century painting by the great Canaletto (Giovanni Antonio Canale). It depicts the crowds of Venetians who each year flocked on Ascension Day to the Fair of St Roch, where artists displayed the works they wished to sell.

Photo © National Gallery, London

entertainment found it at the theatre: every evening there were performances in seven theatres of opera, tragedy, comic opera, and the *commedia dell'arte*, plays without written lines in which the actors showed dazzling virtuosity in improvising new words every time from a simple one-page scenario posted in the wings.

Music lovers listened to sublime concerts in the charitable institutions, nicknamed "nightingales' cages," where orphan girls were brought up, being taught to sing and play musical instruments by the foremost masters of the day. Out of doors one could listen, as Goethe loved to do, to gondoliers singing Tasso's poetry, taking up the melody along the canals.

VENICE thus offered the traveller an unending festival: in the streets and squares there were fetes, acrobats, mountebanks, minstrels, trainers with their performing animals, charlatans offering their wares; on the canals, regattas were held, the first competitor to arrive winning a purse of gold and the last a young pig, and there were processions of boats decked out as mythological palaces.

The aristocrats and their noble foreign guests gave exquisite concerts for one another in the enchanting gardens of Murano, and balls in their palaces, so sumptuously decorated that Gustavus III, king of Sweden, dazzled by their splendour, confessed that such luxury was beyond him.

Eighteenth century Venice, whose arsenals no longer employed more than a few workers, and whose once flourishing silk and glass industries were almost dead, seemed, in this final blaze of her old opulence, to be celebrating for the last time her glory and prosperity.

Fortunately Venice remains Venice, that is to say a city unique for her grace, beauty, and strangeness, the silence of her canals, where the black prows of gondolas thread their way, the palaces resembling some fairy construction in the Arabian Nights, with the reflection of their dream-like façades quivering in the water.

Around Venice still lies the garland of islands of the lagoon: San Lazzaro of the Armenians, where Byron lived in an eastern monk's cell; Torcello, now fever-ridden and deserted, its gardens overlooked by its campanile, which the Huns saw long ago rising like a mirage from the sea; Murano, where glass is heated and shaped in the furnaces; Chioggia, where the red and yellow sails of fishermen's barques painted with stars and pictures of the saints, dance over the water; Burano, where the magic bobbins click in the deft hands of the lace-makers.

The incomparable charm of Venice lies in the combination of all these beauties and marvels, unrivalled by any other city in the world, filling the tourist with wonder and captivating the art lover.

IN the Romantic period, Venice became a peaceful retreat where lovers came seeking concealment, blissfully happy, or luxuriating in despair. Venice used to be called a dead city to render it still more romantic and alluring. In reality it is a bustling town, with countless ships berthing, coming and going; where the passers-by in the street have a quicker and lighter step than anywhere else; where there is tremendous intellectual activity; a town whose music festivals attract the elite of music lovers from all over the world, whose Film Festival selects and awards prizes to the best films from the five continents, and whose Art Biennale has for almost a century brought together, every two years, the boldest and most outstanding works of painting, sculpture and the decorative arts.

In this way Venice is perpetuating her international calling, a calling which goes back to the early Middle Ages and which has been carried on throughout the centuries in varying forms that have always maintained the same level of vitality and inspiration. How can this vocation be followed in the future? Venice should remain as she now is, receptive to all new intellectual trends; but she should also preserve the appearance and character of a town which is unique—the beauty of her scenery and architecture, and the picturesque quality of the life of her streets, all cast their spell on the sightseer.

She should not strive to modernize herself; this would destroy the matchless harmony of the shell in which she dwells, with its network of countless canals; and it would obliterate that wonderful unity of spiritual essence and harmonious forms successive centuries have left intact—Byzantine, Gothic, Renaissance, Baroque, each in its turn falling under the irresistible sway of the spirit of the place, which has always been so happily wedded to the spirit of the time.

Photo Museo Correr Archives, Venice

With its festivities, concerts, theatrical performances, and particularly the famous "Commedia dell'arte" whose actors displayed an astounding virtuosity in improvising their lines, the Venice Carnival was an unending feast of pleasure and amusement, attracting visitors from many countries. Beneath this engraving of 1610, depicting actors "treading the boards" in St. Mark's Square, the artist, Giacomo Franco, has noted the nationalities of several spectators: Greek, French, Spanish, Turkish and English.

PHILAE

AN APPEAL BY THE DIRECTOR-GENERAL OF UNESCO NOVEMBER 6, 1968

EIGHT years after the international appeal launched on March 8, 1960, by my distinguished predecessor, Mr. Vittorino Veronese, the Government of the United Arab Republic and Unesco, on September 22, 1968, solemnly inaugurated the reconstructed temples of Abu Simbel on their new site in the heart of the Nubian Desert. Removed block by block from the sandstone cliff out of which they had been carved, the temples had been raised more than 180 feet and reassembled exactly as they had stood in the past.

The success of this unparalleled enterprise, which bears striking witness both to the extraordinary potentialities of modern technology and to the effectiveness of international co-operation, should not blind us to the fact that the Campaign to Save the Monuments of Nubia is not yet finished.

Spectacular as the results already are, success will not be complete until the temples of Philae are also saved. It has been possible to defer this operation until now because, owing to their position between the old and new Aswan Dams the final immersion of these temples has so far been delayed. But work must now go forward as quickly as possible.

On the basis of a study carried out by a group of Egyptian consulting engineers and architects, the Government of the United Arab Republic has selected a project whereby the temples will be dismantled, removed and reconstructed on a nearby island. The work will take four years and should start in the spring of 1969. The operation will be partly financed by the United Arab Republic, but to guarantee its completion, Unesco must collect, before the end of 1972, at least six million dollars, representing about one-third of the contributions made by the international community to save Abu Simbel.

I cannot imagine that the member states of Unesco, which have given such abundant proof of their generosity, should fail, when so near the goal, to make the final effort necessary to save this wonderful group of monuments, justly called "The Pearl of Egypt", from disappearing forever beneath the waters. Such a failure would be all the more incomprehensible to our own and future generations because the temples of Philae are probably the best known of all the Nubian monuments, and geographically more accessible than many others for the increasing number of visitors who will undoubtedly be attracted to them.

It is therefore with confidence, and in accordance with the unanimous wish expressed by the General Conference of Unesco, that I solemnly call upon governments, institutions and foundations, both public and private, and upon all men of good will to contribute, as the means of each allow, to the success of the final stage in a cultural undertaking whose high significance is obvious to the whole world.

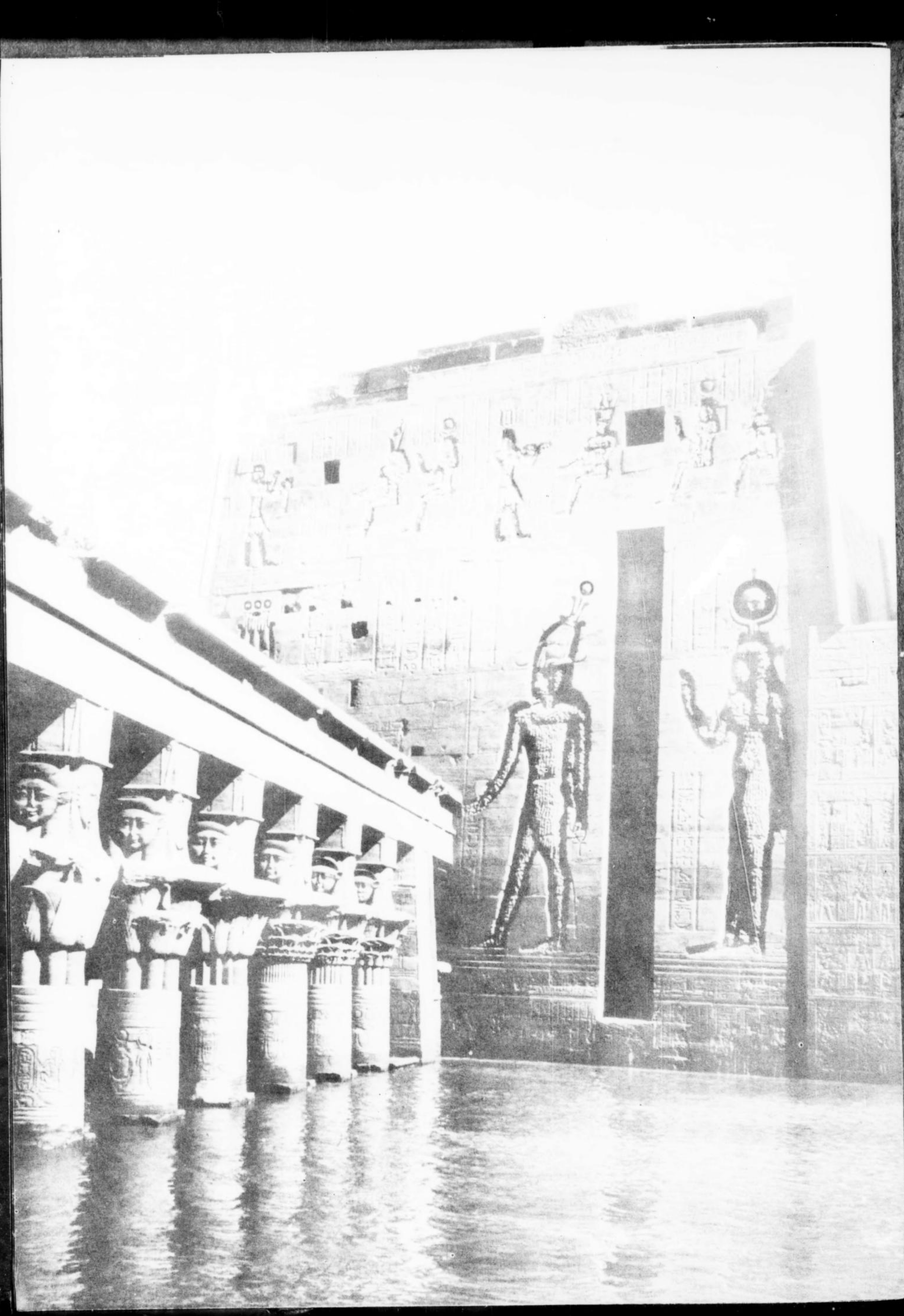
May the intellectual and moral solidarity of mankind, which it is Unesco's mission to promote, be further strengthened on this occasion in the saving of this precious treasure, thus vindicating the worth of the human spirit and advancing the cause of peace.

RENÉ MAHEU
Director-General
of Unesco

The Great Temple of the goddess Isis on the island of Philae in Nubia. Photo shows temple half submerged by the waters of the Nile. Unesco has launched a project to rescue the monuments of Philae. In foreground, the celebrated colonnade of the "mammisi" or "birth house" of Horus, son of Isis. Temple and colonnade were built over 2,000 years ago.

Photo © Max-Pol Fouchet

All photos by Max-Pol Fouchet are from "Nubie, Splendeur Sauvée," published by Ed. Clairefontaine et Guilde du Livre, Lausanne, Switzerland.



THE SURVIVAL OF PHILAE

by Louis A. Christophe

"THE Death of Philae," by the French author, Pierre Loti, created a sensation when it was published just sixty years ago. Yet the noble monuments on this island in the Nile have thus far escaped the death which Pierre Loti predicted for them, although the Aswan Dam downstream has been raised on two occasions.

Moreover, the leprosy of salt deposits which was eroding the lower foundations of the structures has long since disappeared, washed away by the waters which submerged the monuments after 1934, during nine months of the year (see the "Unesco Courier," February 1960). And archaeologists, artists and travellers who, until 1964, braved the rigours of the Nubian summer to land on Philae during the brief period when it emerged from the waters, were stirred by the same emotions felt by their predecessors of the 19th century.

The harmonious ensemble of monuments whose massive forms of traditional Pharaonic architecture blend with the elegance and grace of Grecian-style colonnades, the diversity of reliefs which transform the temples into a colossal "library" on the religion of ancient Egypt—and particularly the cult of the goddess Isis—and the sandstone blocks whose colour changes with every shift and play of the desert light, all helped to make the visitor forget the losses that Philae had suffered in modern times.

Few remembered that until the turn of the century the inner walls of the sanctuaries were adorned with splendid paintings, and that on the "Pearl of Egypt," as Philae was known in ancient times, long palm fronds rippled in the northern breeze, clumps of tamarisk trees were filled with the songs of birds, and swallows, beloved by Isis, returned unfailingly each year to their immemorial haunts.

But the annual spectacle of Philae risen from the waters was seen by a privileged few for whom neither the overpowering heat of Aswan in August, nor the slippery mud in July, neither the deep and dangerous cracks in the earth in September nor the awe-inspiring solitude of the abandoned island were daunting obstacles. Far more numerous were the visitors who came in more clement months, when the approaches to the First Cataract of the Nile unexpectedly recall the vistas of some mythical paradise.

To dream of Philae, the enchantress, and then to discover only the mutilated reliefs on its monumental pylons, or to search, often in vain, for

CONTINUED ON PAGE 52

LOUIS A. CHRISTOPHE, *French Egyptologist, is head of Unesco's Section of Nubia Monuments, and from 1960 to 1967 was Special Representative of Unesco in Cairo for the International Campaign to Save the Monuments of Nubia. He has written many studies on Egyptology and is the author of a fascinating book on the discovery of Abu Simbel by the Swiss explorer Johann Burckhardt, entitled "Abou Simbel et l'Epopée de sa Decouverte" (Editions P.F. Merckx, Brussels, 1965).*

Photo © Max Pol Fouchet

According to Egyptian mythology, each tenth day the goddess Isis crossed from Philae to the neighbouring island of Biga to visit the tomb of her husband Osiris. Left, detail of a relief on a pylon of the temple of Isis on Philae, depicting one of the bearers of the sacred bark in which Isis made her journey.

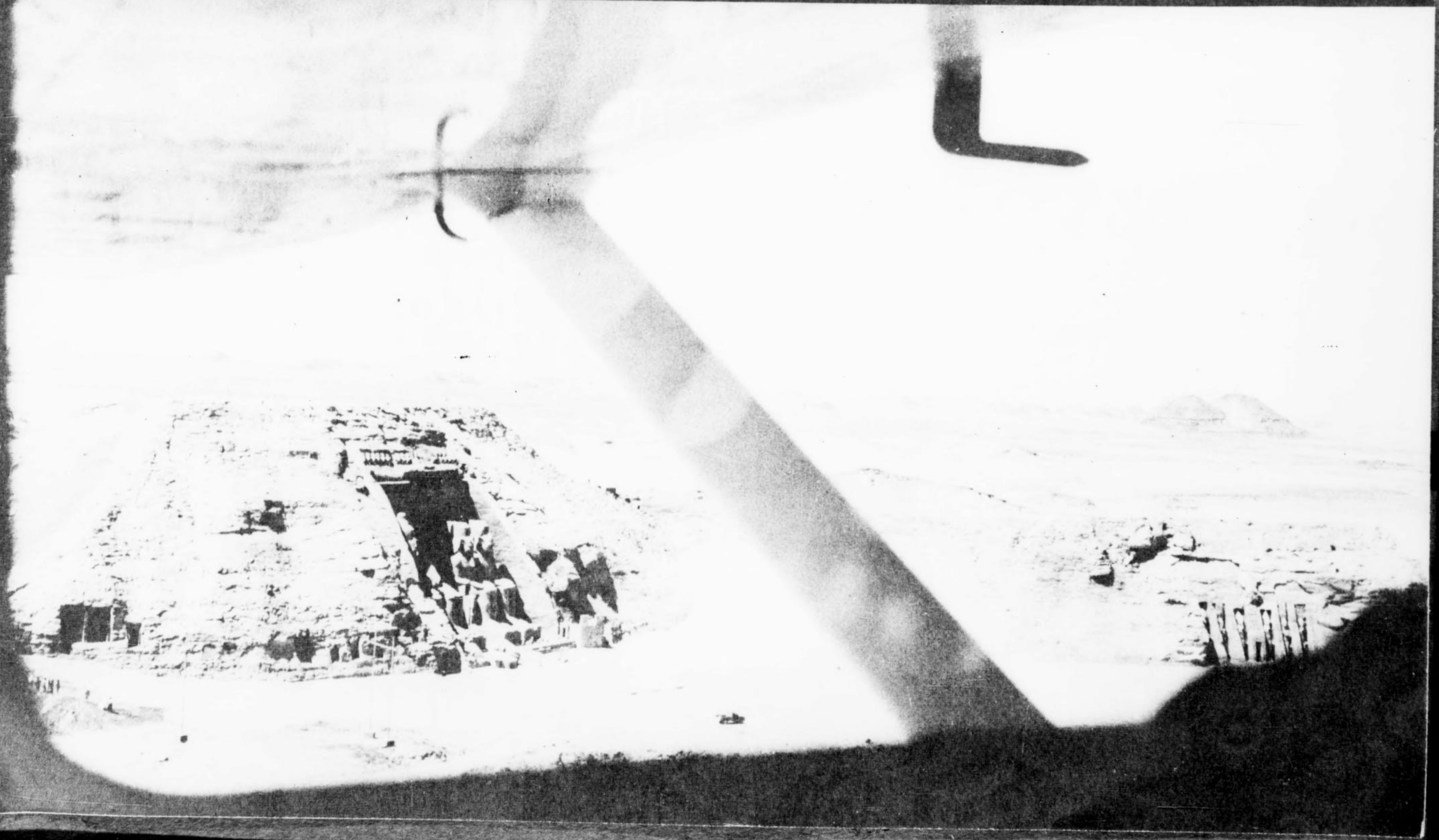
The construction of the ensemble on Philae began about 400 B.C. and continued for a further six centuries. Right, emerging from the waters, the colonnade of Trajan's "Kiosk", an imposing edifice raised by the Romans in the Ist and 2nd centuries A.D.

Photo Unesco - Dominique Roger

ABU SIMBEL RESCUE OPERATION COMPLETED

The famous Nubian temples of Abu Simbel, lifted block by block nearly 200 feet above their original site, today stand in all their ancient majesty on a plateau high above the Nile. The rescue of Abu Simbel from the waters rising behind the new Aswan High Dam was carried out under the International Campaign to Save the Monuments of Nubia, launched in 1960 by Unesco and supported by its member states. This monumental feat of engineering lasted four and a half years and involved cutting, lifting and transporting more than 2,000 blocks of stone, some weighing 30 tons, and piecing them together to reconstitute the temples exactly as they were built by Rameses II, 3,200 years ago. Above, one of the huge concrete domes constructed above each temple to support artificial hills designed to reproduce the original settings of the monuments. Below, air view of the ensemble of Abu Simbel on its new site: left the Great Temple of Rameses; right, the smaller temple of Nefertari, wife of Rameses. The temples were ceremonially inaugurated on September 22, 1968.

Photo Unesco - Dominique Roger



traces of the submerged colonnades in the calm but cloudy waters is enough to make one regret that the builders of the Aswan Dam, and those who twice increased its height, failed to give the archaeologists of the Egyptian Antiquities Service the opportunity to rescue the island and its monuments. A plan to save them had indeed been drawn up, but could not be undertaken through lack of national resources.

Then, in 1960, a great hope was born. Specialists sent to Nubia by Unesco in the autumn of 1959 to study the problems of safeguarding its sites and monuments, supported by a vast wave of international solidarity, incorporated the preservation of Philae's monuments into the overall plan for the Nubian campaign. And when the Director-General of Unesco made his solemn appeal on March 8, 1960, it was Philae he had in mind, second only to Abu Simbel, as a majestic ensemble to be saved by the International Campaign he had just launched.

SINCE the island of Philae is located between the old and new Aswan Dams, there was no need to put a rescue operation into effect for several years, which gave time to prepare the project (see the "Unesco Courier," October 1961). A target date was set for 1968, by which time it was estimated that the High Dam would be nearing completion and its turbines, built to provide electricity for the industrial development of the United Arab Republic, would be in service.

These years of respite were usefully devoted to the launching and completion of a major operation in Nubia—the removal to safety of the temples of Abu Simbel (see pages 52-53)—and to the study of projects for the preservation of Philae.

In 1955, when plans were being drawn up for the construction of the High Dam, the Egyptian Antiquities Department published a study entitled "The Salvage of Philae." Its author, Osman R. Rostem, proposed to isolate Philae from the rest of the Aswan Lake by a series of small dams or dikes. This idea, put forward at a time when the High Dam was still a theoretical project, seemed perfectly feasible to the Unesco specialists as an operation that could be carried out in the more or less distant future, since the flooding of the High Dam would reduce the water level at Philae in comparison both with the former level of the Aswan Lake and the waters of the High Dam.

Therefore a more elaborate study of the Rostem proposal, commissioned by the Government of the Netherlands, was carried out by NEDECO, a Netherlands firm of consulting engineers. This proposed the construction of three dikes between the right bank of the Nile and the islands close to Philae, thus creating a new lake in whose centre the monuments of Philae would stand in their original setting and splendour. The level of this lake was to be controlled by a pumping station. But further studies showed that this would be too costly, and an alternative solution to carry away surplus water via a drainage tunnel was proposed.

Though endorsed by the majority of archaeologists and landscape architects, since it preserved the monuments of Philae on their original site, the Rostem-NEDECO project had certain drawbacks. Some problems, such as water seepage, could be solved; other were likely to prove more difficult. For example, might not the monuments in their hollow be isolated from the wild landscape of the First Cataract of the Nile by the high rectilinear walls of the three dams? But the main obstacle that remained was the steadily rising cost of a project of this type.

By 1965 the threat to Philae was greater than ever before. It had been decided that the hydro-electric power station near the old Aswan Dam would be used to supplement the turbines of the High Dam. Thus, the water in the lake between the two dams would have to be kept at a sufficiently high level and also raised and lowered by from plus to minus three metres daily.

By now the foundations of the monuments were submerged throughout the year, while some ten metres above them the daily rise and fall of the waters first submerged the sandstone reliefs and then exposed them to the open air, thus weakening their resistance to corrosion by the atmosphere.

THE rescue of the monuments on Philae was thus becoming more and more urgent and called for a rapid decision. From new studies by a group of consulting architects and engineers in Cairo came a second project, designed to take account of archaeological requirements and financial resources.

The new project proposed dismantling the monuments of Philae, stone by stone, a method already used to save most of the other threatened monuments in Nubia, notably the temple of Kalabsha, and reconstructing them on the island of Agilkia, 300 metres downstream from Philae.

The operation would be carried out as follows. First, the level of the water around the temples would be lowered to ground level long enough to permit measurements and recordings to be made, so that the monuments could be reconstructed in their proper symbolic orientation, each in correct relation to the others and with every architectural feature replaced exactly as before.

To lower the water level around the monuments for a long period would obviously be impossible for economic reasons. It would thus be necessary

CONTINUED ON PAGE 54

THE FATE OF PHILAE IN THE 20TH CENTURY

Before 1902

Taken just before the turn of the century, this photograph shows the site of the temples of Philae high and dry above the First Cataract of the Nile. The building of the first Aswan Dam (1899-1902) created a lake which flooded the island for part of the year. The dam was later raised on two occasions, between 1907 and 1912 (after which it was necessary to tour the monuments by boat), and again between 1929 and 1934, when it inundated the temples for nine months of the year. The monuments suffered the irreparable loss of their many-coloured frescos which had survived intact for 2,000 years down to the 19th century.

Before 1965

For thirty years (1934-1964), Philae and its temples were engulfed by the Nile from October to July. Only the tips of the first pylon of the Great Temple of Isis were visible above the waters (right). In July, after the opening of the sluices of the first Aswan Dam, the temples emerged in their entirety, a magnificent spectacle (far right) for those who braved the midsummer heat. During these three decades, the water dangerously attacked and weakened the sandstone, but the monuments survived because their foundations had been consolidated in 1900 by the Egyptian Antiquities Service.

Today

The construction of the new Aswan High Dam, upstream from Philae, will doom the "Pearl of Egypt" to certain death unless efforts are made to save it. The rise in the water level of the Aswan Lake since 1965 now floods the sanctuary of the goddess Isis to about half its height, and the foundations of Philae's monuments are gradually being eroded by daily fluctuations of up to six metres (19 ft.) in the water level. Right, Philae in 1968. It is now proposed to save Philae by dismantling its temples and re-erecting them on the island of Agilkia, beyond the reach of the Nile.

Photo Unesco - Dominique Roger

Photo © Lehnert and Landrock

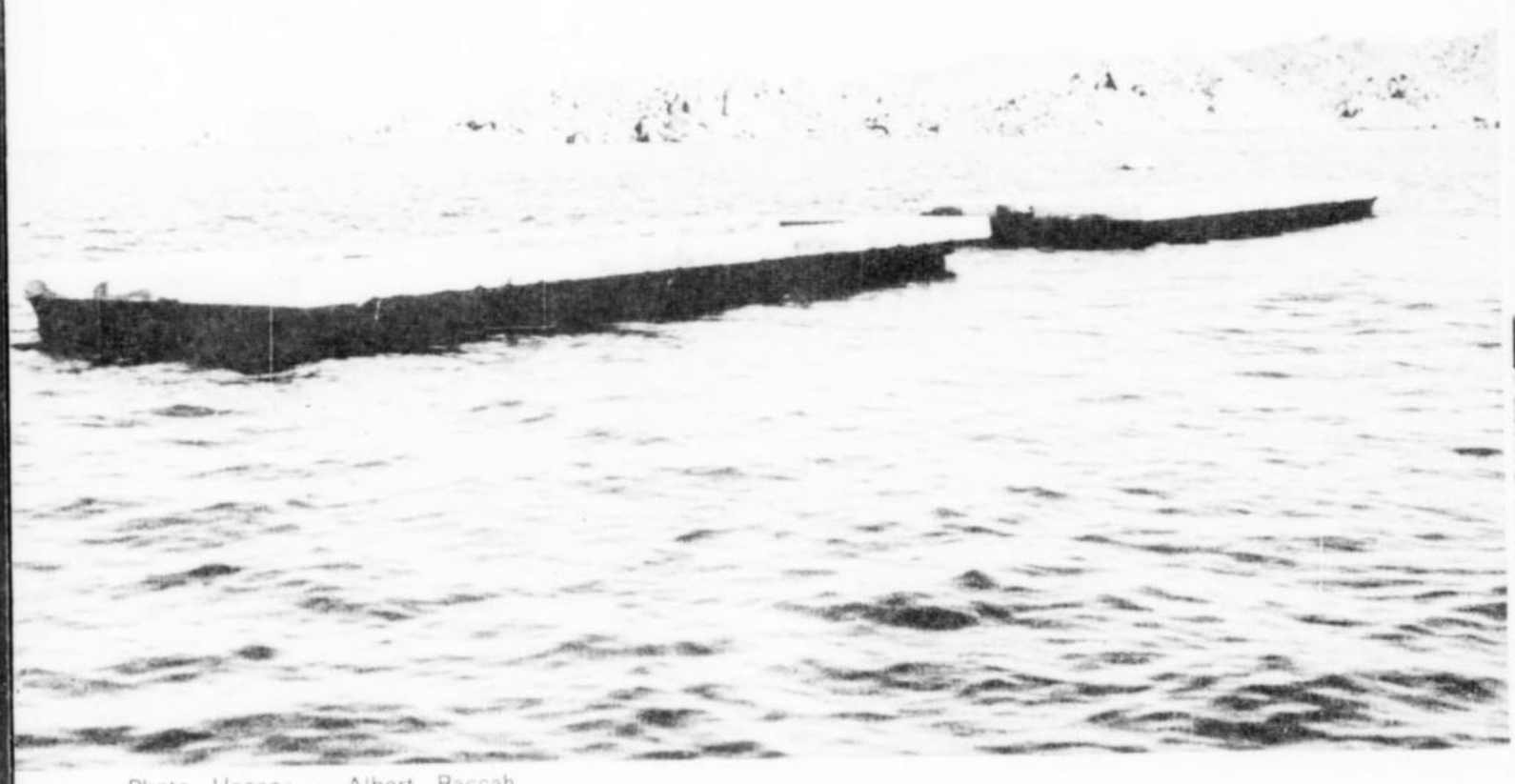
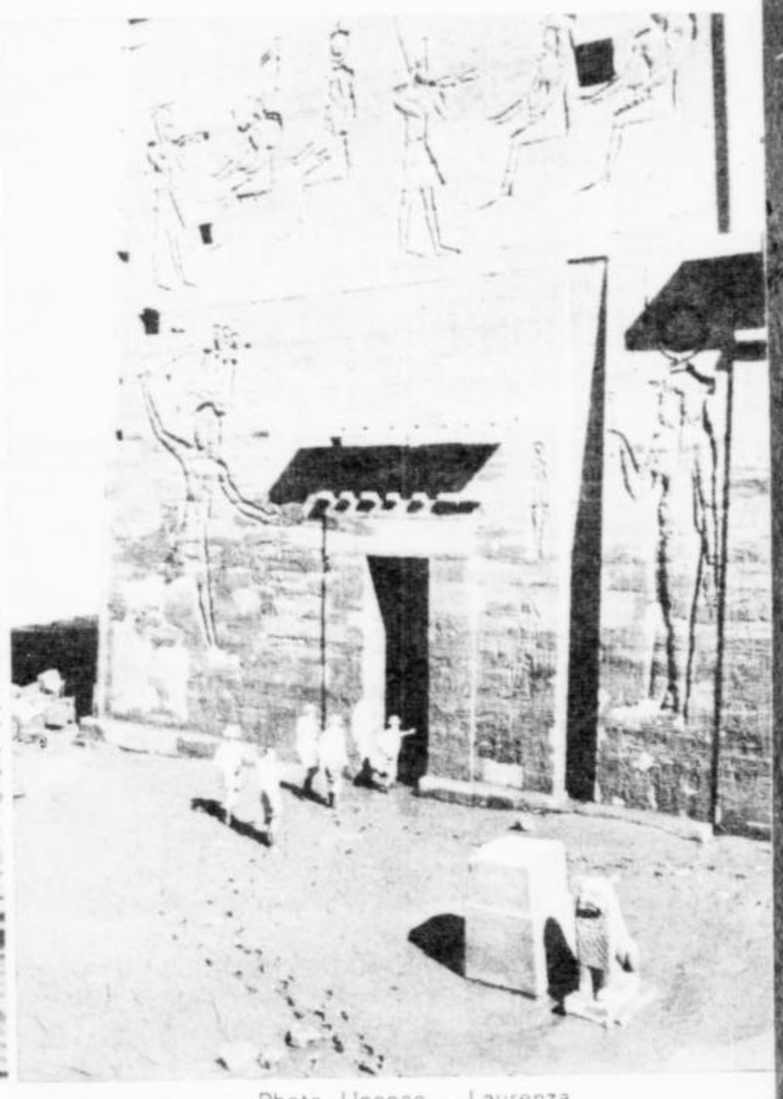


Photo Unesco - Albert Raccah



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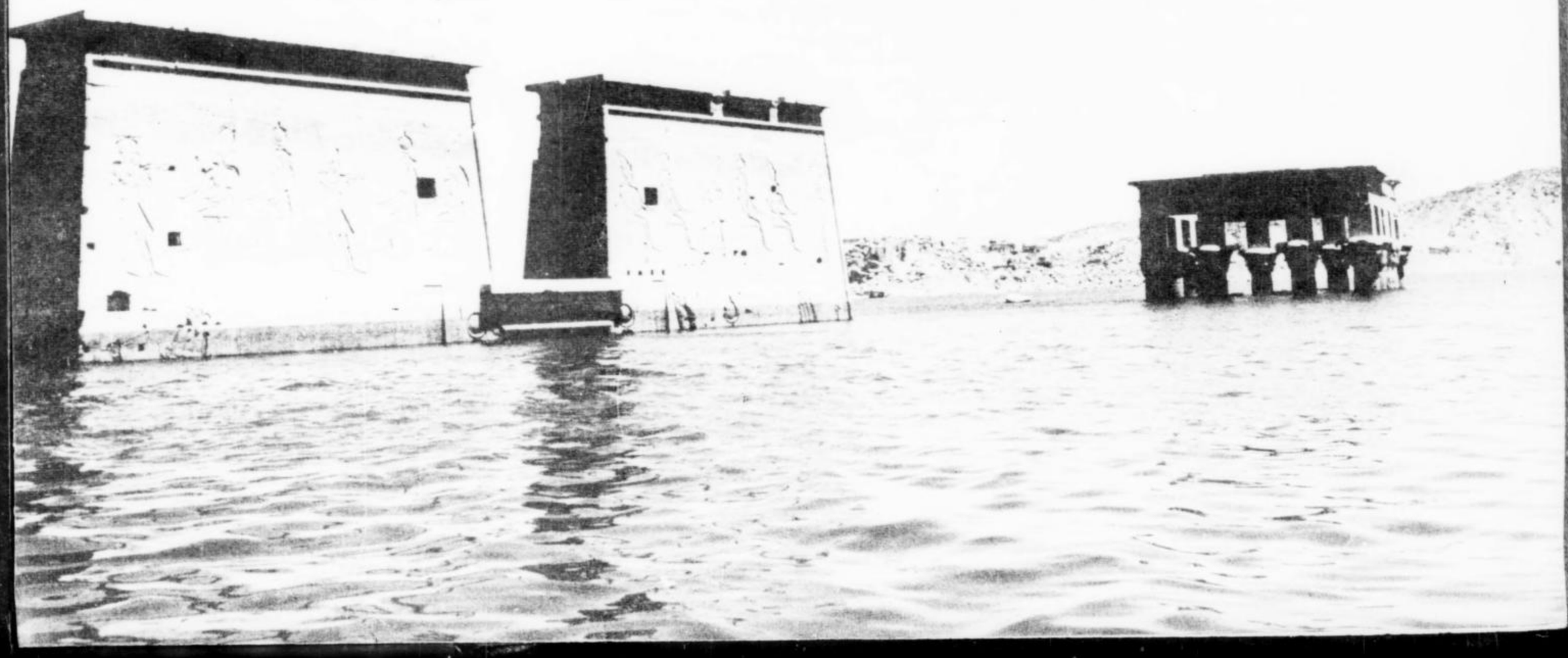

Photos © Max-Pol Fouchet

Hathor, one of the great deities of ancient Egypt, is portrayed here with the ears of a cow, which reflects her mythological role as sustainer of life and mother of the world. This image of the goddess is carved on the capital of each column on the "birth house" of Horus, on the island of Philae.

Drawing shows the course of the Nile between the old Aswan Dam (left) and the High Dam (Saad-el-Aali) on right. Between the dams are the islands of Philae, Biga and Agilkia. Philae's monuments are to be removed and rebuilt on Agilkia (arrowed).

THE SURVIVAL OF PHILAE
(Continued)

to build a coffer-dam around the principle monuments which could then be safely dismantled. Other monuments, of which only the lower foundations remain, could be recovered by simpler and less costly techniques.

While the blocks of stone (estimated at between, 15,000 and 20,000) were being moved to a storage area in the plain of Chellal on the right bank of the Nile, a new site for the monuments would be prepared on the island of Agilkia.

Far higher than Philae, Agilkia has peak levels of 150 metres and thus rises well above the level of the Aswan lake. But to accommodate all the temples in an area equivalent to their former site, its pinkish granite surface would need to be levelled and parts of the island extended in width and length by the addition of terraces

These bas-relief sculptures of Hathor, a goddess often identified with Isis, flank the monumental gateway to the temple of Isis on Philae. Sculpture on the left was defaced at the time when Christianity was introduced into Egypt and the temple of Isis was converted into a church.

built up of rockfill covered with sand.

The final phase would be the reconstruction of the temples, kiosks and pylons on Agilkia, a task facilitated by experience gained during similar operations on several Nubian sites, such as Kalabsha, Kertassi, Dakka and Amada. The monuments would once again stand in their respective places, each facing in its original direction: the temple of Isis looking south; the kiosk of Trajan greeting visitors arriving from the east bank of the Nile; the kiosk of Nectanebo, those landing on the southern shore of the island; and the gate of Hadrian opening on the west. But through its portals the vestiges of the temple of Osiris will no longer be visible. The temple will be left on the island of Biga, a prey to the rise and fall of the waters in the Aswan lake.

The Government of the United Arab Republic finally chose the project to dismantle, transfer and reassemble the monuments of Philae, in preference to the Rostem-NEDECO project, for financial reasons. The cost of transferring the monuments is estimated at 5,350,000 Egyptian pounds ($12,305,000) as compared to an estimated cost of 6,450,000 Egyptian pounds ($14,825,000) for preserving them on their original site. Furthermore, the proportion of hard currency needed for the transfer project is only 40 per cent of the total as against 60 per cent for the project to build dikes around the temples.

Work is scheduled to start in the spring of 1969 and will take four years to complete. Early in 1973, the monuments of Philae, unchanged in every respect, will have become the monuments of the "new" island of Agilkia. Philae, engulfed by the Nile, will have been irrevocably deprived of its crown of buildings, and a shroud of river silt will soon hide the wounds inflicted by the tools of modern technology.

In compensation, the once desolate island of Agilkia will have been garbed in an array of sculptured stone and its barren surface covered by kiosks, colonnades, pylons and sanctuaries to which the swallows of Isis will return once more.

Tamarisk trees and palms may flourish again and beneath their shade, throughout the year, visitors will try to visualize the splendours of the festival in Greco-Roman Egypt, when the shrine of the goddess, followed by a cortege of her priests, musicians and dancers, and acclaimed by the host of pilgrims, completed its journey on the Nile and was restored, until the next year's flood, to its chosen sanctuary.

VENICE AND THE VENETIANS OF TOMORROW *(Continued from page 38)*

built to take the increasing traffic between Venice and the mainland. Others say, on the contrary, that all road and rail links ought to be cut, so that Venice may preserve its island character.

Plans for a motorway which would run the whole length of the old city have already been turned down by the authorities. Instead, it has been proposed that an overhead railway be built on pylons almost 100 feet (about 30 metres) high, with some parts of the track disappearing discreetly underground. However, the pylons would still mar the beauty of the lagoon.

For aesthetic reasons, consideration has been given to a possible system of underground communications: tunnels under certain canals, duplicating bridges and ferry-crossings, and, the most ambitious project of all—an underground railway linking the city centre to the mainland, with a possible extension to Padua and Treviso.

The Italian authorities have closely studied this project. It would, of course, take years to carry out, but it would help to save Venice by reducing the congestion of water traffic, particularly on the Grand Canal and the Rio Nuovo, and would, at the same time, do away with the water turbulence that threatens the city's buildings.

An effort to restore to Venice the kind of vitality it enjoyed at other periods in its history, and which would satisfy the demands of the modern world, should not merely seek to preserve its population by providing up-to-date housing and communications, or to develop its commerce and industry. Such a Venice would no longer be Venice.

Development everywhere is as much a cultural as an economic and technological problem. The cultural life of Venice will be significant and command respect only if it reflects a genuine physical, economic and social vitality. Cultural development must always set the pace.

For centuries now, the University of Venice has been situated in Padua. However, a number of people actively concerned with cultural development want to make the old city of Venice an international centre of higher education.

Such a project would involve the setting-up of a number of university institutions: faculties of social sciences, arts, the history of art, maritime studies, institutes of town planning and architecture and an international university of traditional crafts. The Venice city council has already adopted a scheme for setting up an international Centre for Engineering Sciences, which would occupy the Palazzo Fortuny.

The idea would be to make Venice a modern version of ancient Athens, where students, research workers and thinkers from all countries would find a place for reflection, work and discussion. It is with this in mind that 500 students from universities in Canada and the United States are being invited to study in Venice in 1969. This movement ought to develop and spread, but if it is to do so, young people from all over the world must find in Venice young people to welcome them.

The Venice Biennale illustrates the city's traditional concern with cultural enrichment. As early as 1895, the International Exhibition of Modern Art was revealing avant-garde talent, as well as organizing retrospective exhibitions of painting and sculpture. Since then the Biennale has expanded to include an impressive programme of events: international drama and film festivals, concerts and so on. There is obvious scope for the development of such programmes in the future.

As for the tourist trade, who can deny that Venice needs it? And yet, Venetian students have angrily denounced tourism as an evil. There is undoubtedly a form of tourism which is scarcely more profitable to Venice than to the tourists themselves. Hordes of tourists invade Venice each summer and take away little more than photographs of pigeons.

Cultural development plans would therefore aim to change the image of Venice, to enable the city to give of its best to all its visitors and not only to a few sophisticates or to the "jet set" members of international society who seek amusement at balls and in the casinos.

The cultural development of Venice as a factor in the preservation of this irreplaceable city will fail unless full advantage is taken of future promise as well as past glories.

Nothing is as yet settled; everything is still possible—even that Mestre may one day become the regional capital, with Venice as a dying suburb. Then perhaps the very people who fought for this isolation, and who resisted change, will leave it in their turn. And the work of men who chose to consider man a danger will be handed over to the old enemies, salt and water, which will inexorably gnaw away at the city's already crumbling stones.

This is what would happen if daring, ambition, eagerness to move onwards —in a word, youth—were to leave Venice and settle on the mainland, as if in a foreign country. It will not happen if Venice remembers what she has been for the last 1,000 years—an incomparable centre of culture, a city invigorated by its lust for life and confidence in the future.

BOOKSHELF

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■ **Statistical Yearbook 1966**
Population, education, libraries and museums, book production, newspapers, paper consumption, film and cinema, radio and TV.
1968 ($14; 82/-stg.)

■ **Readings in the Economics of Education**
1968 ($3.50; 21/-stg.)

■ **Aerial Surveys and Integrated Studies**
Natural Resources Research Series, VI. 1968 ($23; £6.18.0)

■ **Music Theatre in a Changing Society**
Edited by Jack Bornoff.
1968 ($3; 18/-stg.)

■ **The Skopje Earthquake 1963**
Report of the Unesco Technical Assistance Mission.
1968 ($8.50; 51/-stg.)

■ **National Science Policies of the U.S.A.: origins, development and present status.**
Science policy studies and documents.
No. 10. 1968 ($3.50; 21/-stg.)

■ **Access to Higher Education in Europe**
1968 ($4; 24/-stg.)

★

■ **The United Nations and Human Rights**
Oceana Publications Inc., Dobbs Ferry, New York. 1968 ($2.50)

■ **Yearbook on Human Rights for 1964**
United Nations, New York and Geneva, 1967 ($6)

■ **Human Rights & Fundamental Freedoms in Your Community**
By Stanley I. Stuber
Association Press, New York. 1968 (hardback $3.95; paperback 95c.)

■ **Born to Hunger**
By Arthur Hopcraft
(sponsored by the Freedom from Hunger Campaign)
William Heinemann Ltd, London (hardback 35/-); Pan Books Ltd., London, 1968 (paperback 5/-)

★

LANGUAGE AND LANGUAGE LEARNING

■ **What's in a Word? Language — Yesterday, Today, and Tomorrow**
By Mario Pei
Hawthorn Books Inc., New York, 1968 ($5.95)

■ **Foreign Languages in Primary Education**
By H.H. Stern
Oxford University Press, London, 1967 (11/6 stg.)

■ **Selected Articles on the Teaching of English as a Foreign Language**
By L.A. Hill
Oxford University Press, London, 1967 (8/6 stg.)

From the Unesco Newsroom...

President-translators

A collection of poems by King Mahendra of Nepal was published recently in a Hebrew translation by Israel's President, Dr. Zalman Shazar. The first performance was given this year of a Swahili version of Shakespeare's "Julius Ceasar," translated in 1962 by President Nyerere of Tanzania. And a translation into Urdu of Plato's "Republic" by Dr. Zakir Husain, president of India, is one the latest works published by the Indian Academy of Letters with Unesco assistance.

World snow and ice census

Glaciologists are to make a global survey of the quantity of snow and ice on the surface of the earth as a contribution to the International Hydrological Decade (launched under Unesco's auspices in 1965). According to the International Commission on Snow and Ice, which is supervising the survey, of the 1,360 million cubic kilometres of water in all its forms on earth, only 35 million cubic kilometres consist of fresh water, 80% of this being in the form of ice or snow.

Nubian temple for Spain

In recognition of the important work done by the Spanish Archaeological Mission in the international campaign to save the monuments of Nubia, the United Arab Republic has made a gift to Spain of the temple of Debod, built in the 4th century B.C. and completed by Cleopatra and Emperor Augustus. Debod was a stopping place for pilgrims on their way to the temples of Philae, to worship the goddess Isis. The dismantled temple's 1,700 stone blocks will shortly be shipped to Spain and reassembled.

Meiji Village built near Nagoya

Meiji Village, a trust foundation created to preserve buildings of the Meiji era is being built at Inuyama near Nagoya City. A number of representative historical buildings have been dismantled, moved and reconstructed on the tree-covered hills near Iruka, on an 80 acre (33 ha.) site.

Audible traffic lights

An acoustic signalling device designed in Sweden helps the blind to distinguish between "stop" and "cross" at pedestrian crossings. When the light is red, the device ticks at a frequency of 75 pulses a minute which rises to 750 pulses when the light turns green. The device is audible nine metres away.

Teachers in knee pants

Child-to-child tutoring in some American schools is helping ease the serious shortage of teachers. The technique is new but the theory is old and very sound, according to some U.S. educators. They maintain that the most effective teachers of children are often other children, and that many children who fail to learn from teachers (or whose teachers fail to teach), learn from each other.

Computers in the hospital

Staffs of several London hospitals will soon be relieved of some of their routine work by two new computer systems. At King's College Hospital, a computer will process admissions, nurse and bed allocation, drug and diet control and the analysis of laboratory and other tests. The other computer will aid London's teaching hospitals and two major hospital regions by tackling one of the most varied and complex payroll structures ever dealt with by computer.

'Flying squad' control of traffic noise

Mobile police control of traffic noise will begin on a trial basis in Sweden next year. Noise meters compact enough to be carried in police cars will first be used in the big cities and later in all parts of the country. So far no decibel standards for acceptable engine noise have been established in Sweden, but a special committee investigating traffic noise problems is expected to recommend permissible decibel figures.

Pakistan's targets in education

By 1970, more than 13 million Pakistani children will attend primary school, compared to just over five million in 1960. The target for secondary enrolment in 1970 is 2,800,000; in 1960, there were only 140,000 children in Pakistan's secondary schools.

All about libraries

Unesco's programmes and current international developments in library, documentation and archives services are regularly reported in the *Unesco Bulletin for Libraries*, now in its 22nd year. Topics for 1968 include: international standards for hospital libraries, libraries and International Year for Human Rights, abstracting problems in developing countries, training qualified staff, particularly in developing countries, and audio-visual materials in libraries. Subscribe through Unesco national distributors (see page 59). Annual rates (six issues): $4, 24/-, 14 F, or equivalent in local currency.

Venezuela's farm schools pay their way

Farm schools in Venezuela are self-supporting, being financed through the sale of farm produce raised on their land by students. On leaving school, students receive a loan of $1,200 which enables them to farm plots with the help and supervision of school staff members.

Flashes...

■ *Unesco now has 125 member states, following the recent entry of Barbados and Mauritius.*

■ *Although the world will need 70 million primary teachers by the year 2000, present training facilities could produce only 20 million qualified teachers by that time, according to recent Unesco estimates.*

■ *World Bank loans of $17.2 million for road improvements and $18.3 million for railway modernization are expected to stimulate agriculture and industry in Colombia.*

■ *Recent estimates indicate that the Indian Ocean is "under-fished," and that annual catches could be increased from 2 million to 20 million tons without damaging stocks.*

■ *Mexico has become the first nation to place its entire nuclear programme under the supervision of the International Atomic Energy Agency to ensure that the work is entirely for peaceful purposes.*

The golden rule

International Year for Human Rights 1968 marks the 20th anniversary of the adoption and proclamation of the Universal Declaration of Human Rights by the U.N. General Assembly on December 10, 1948. The Declaration embodies ideals which have been the inspiration of the faiths, philosophies and laws of many nations. Its expression of the common brotherhood of man has been proclaimed in the sacred writing of many faiths. The following are a few such examples.

Christianity: All things whatsoever ye would that men should do to you, do ye even so to them: for this is the Law and the Prophets. *Matthew 7:12.*

Judaism: What is hateful to you, do not to your fellowmen. That is the entire Law; all the rest is commentary. *Talmud, Shabbat, 31a.*

Brahmanism: This is the sum of duty: Do naught unto others which would cause you pain if done to you. *Mahabharata, 5, 1517.*

Buddhism: Hurt not others in ways that you yourself would find hurtful. *Udana-Varga, 5, 18.*

Confucianism: Surely it is the maxim of loving-kindness: Do not unto others that you would not have them do unto you. *Analects, 15, 23.*

Islam: No one of you is a believer until he desires for his brother that which he desires for himself. *Sunnah.*

Taoism: Regard your neighbour's gain as your own gain, and your neighbour's loss as your own loss. *T'ai Shang Kan Ying P'ien.*

Zoroastrianism: That nature alone is good which refrains from doing unto another whatsoever is not good for itself. *Dadistan-i-dinik, 94,5.*

Letters to the Editor

PERILS OF DRUGS, DRINK...

Sir,

Congratulations on your special issue dealing with the abuse of drugs (May, 1968). I attend meetings of a group of former alcoholics, and among them I have observed many of the characteristic traits you describe in your articles on drug addiction. I would like to see an issue of the "Unesco Courier" devoted to the problem of alcoholism.

Robert Dauteuil
Wissous, France

...AND TOBACCO

Sir,

In your interesting issue, "Abuse of Drugs", why was there no mention of a drug that has done more harm to human beings in the past five centuries than all the hallucinogenic drugs taken throughout history. In France it claims as many victims as road accidents; in Great Britain, three times as many; and in the United States five times as many. How was it that the beautiful *Nicotiana Tabacum* was not included among the drug producing plants whose pictures you published?

Few of us are personally acquainted with addicts of opium or the hallucinogenic drugs, but we all know heavy smokers whose vice causes them to waste money and shorten their lives by falling victim to the ills produced by smoking : heart attacks, peptic ulcers, bronchitis, emphysema and lung and throat cancers.

Narcotics are not yet sold on every street corner, but cigarettes are; while costly publicity campaigns urge us to smoke more and more...

A. Sonnier
Nice, France

THE RIGHT TO SELF-DETERMINATION

Sir,

The fact that certain people, of whom one is Jean Jordan (Letters to the Editor, July-August 1968), are even aware of the existence of publications like the "Unesco Courier" is a constant source of wonder to me. Rather one would have thought its readers would be from the forward-thinking, humanistic sector of the community. Surely the important issue at stake is what is happening now and why is it happening now? The positive or negative aspects of white colonialism in Africa or elsewhere have been but an obstacle to each country's right and desire for self-determination in its own fashion. Any advance of the human rights of either individuals or nations can only be commended; this is a world of developing countries, on the equal footing which provides the truest basis for international understanding.

John Pulsford
University of Melbourne
Australia

UNESCO AND YOUTH

Sir,

The idea to make Unesco an organization for youth, expressed by its Director-General, Mr. René Maheu ("Unesco Courier", July-August 1968), has come at the right moment.

I spent part of this past summer in an international work camp composed of young people from twelve nations, including Japan, Ghana, and Czechoslovakia. We became fast friends, working together, sweating in the sun, joking, teaching each other songs and phrases in our own languages.

However, this solidarity, which might be the basis of valuable co-operation in the future, is being undermined in many international meetings or is ignored by those who officially represent their country abroad.

Conny Arkenbout
Haarlem, the Netherlands

Sir,

Why not devote an issue to the worldwide revolt among students and workers? Even as an attempt to resolve the conflict between the generations this would be a worthwhile enterprise. Show youth that the ideal Unesco stands for is the ideal of young people in all countries. Help to restore the confidence of parents in the younger generation, since the older generation is alarmed by youth's attitude towards the civilization it will one day inherit. Perhaps then Unesco can hope to become the organization of youth.

Jean Paul Le Roux
Sené, France

FIRST THINGS FIRST

Sir,

I am sorry but I don't agree to Unesco's aid to archaeological restoration (in search, amongst other things, of "tourist development"), outlined in your June 1968 issue. Man has no need to clutch at the past.

This money should go first and foremost to alleviate problems of hunger etc.

Richard Fairclough
Paris, France

THE WORLD YOUTH HOPES FOR

Sir,

I imagine I am not alone in my appreciation of the scope, idealism and competence of the prize-winning essay from Uruguay on "The World We Hope For", written by Maria Cristina Costa Diaz ("Unesco Courier", February 1968). Now we should like to see a symposium of extracts from essays by similarly thoughtful young people, offering suggestions as to how they think these ideals might eventually be achieved. We older folk have wanted this kind of world for decades, but we have not been able to be sufficiently creative and adventurous in finding ways to put the ideals into practice. We must be ready to help and encourage the younger folk who have perhaps more vision.

M. E. B. Johnson
London, U.K.

SLAUGHTER OF BABY SEALS

Sir,

I would urge you to use your influence in Canada and in other countries where young seals are being massacred, to help put an end to this revolting and shameful carnage. The suffering of helpless animals is perhaps even more horrible than that of human beings, who at least can defend themselves. An article in the "Unesco Courier" would help to alert people in all countries to this tragic problem.

Sella Achedjian
Brussels, Belgium

'THE WAR GAME'

Sir,

The Unitarian Extension Movement in Australia is gravely concerned at the action of the British Broadcasting Corporation in suppressing the telecasting of "The War Game," a film produced for the BBC and designed to show the full impact of nuclear warfare.

The BBC action in allowing the film to be shown only in cinemas and under certain conditions has meant that the bulk of the world population is effectively stopped from seeing it. This situation is compounded by the fact that the BBC will not allow the film to be telecast anywhere in the world.

There is no doubt whatever that the frequent telecasting of this film would make millions of people throughout the world acutely conscious of the dangers of nuclear war and would therefore harden public attitudes against any policies which may result in a nuclear war breaking out.

The virtual suppression of this film by the BBC may well have inhibited something which could have profoundly affected future attitudes to and an awareness of this important question. This would be a major tragedy.

H. Forrest
East Melbourne
Victoria, Australia

Imp. GEORGES LANG, PARIS. IMPRIME EN FRANCE. — Dépôt légal, 4e trimestre 1968 - C 1

UNESCO COURIER INDEX 1968

January

INTERNATIONAL YEAR FOR HUMAN RIGHTS. How the charter on human rights was born (R. Cassin). 30 questions on human rights. Unesco and human rights. Only the educated are free (L. François). Education in the Peruvian Andes. Ubiquitous shadow of racism (J. Rex). New frontiers of international law (S. MacBride). Art treasures (22) Young king (Crete).

February

SCIENCE AS CULTURE. Science and the culture of our times (L.M. Gould). Culture's role in a scientific world (L. Kassil). Science and fundamental concepts of thinking (P. Couderc). Unesco mathematical model to harness the Mekong (W.J. Ellis). Intercontinental exchange of information by satellite (W. Schramm). The world we hope for (M.C. Costa Diaz). Art treasures (23) Celestial musician (Japan).

March

OUR HEALTH TOMORROW. Health in the world of tomorrow (M.G. Candau). Facing the 21st century: longer life; bigger populations; bigger cities (J-M. van Gindertael). Wanted: 3.5 million doctors (S. Kavka). Click of computerized medicine (J. Anderson). Medical experimentation on man (M. Florkin). How's the world's health? Art treasures (24) Bells of folly (Odilon Redon).

April

LITERACY. Literacy appeal. Outside the written word (F. Valderrama). Down-to-earth approach to literacy (A. Deleon). Literacy: ABC of development. Shorthand class that started an avalanche (F. Salis, L. Attinelli). Sardinia, island of poetry. Talk with Princess Ashraf. Our only realistic hope of eradicating illiteracy (C. Jeffries). International year for human rights (R. Maheu).

May

ABUSE OF DRUGS - THE GROWING MENACE. International control of narcotics (V. Kusevic). The history of drugs, from opium to LSD (M. Granier-Doyeux). Mind-altering drugs (R.H. Blum). LSD - new menace to youth (K. Evang). The vogue of the pill - tranquilizer, that is (G. Avroutski). Interpol vs. the underworld of narcotics (J. Nepote). Unesco statement on race and racial prejudice. Art treasures (25) Lady of mercy (Switzerland).

June

THREATENED: THE PARTHENON, BOROBUDUR, SRIRANGAM... Saving our heritage in stone (H. Daifuku). Unesco conservation missions. Plan for cultural tourism in Brazil (M. Parent). Parthenon in peril (G. Dontas). Colour pages. Borobudur in danger of destruction (B.P. Groslier). Mammoth temples of southern India and Guatemala. Protecting Europe's cultural heritage. Kazanluk's Thracian tomb. Great men, great events. Art treasures (26) Gateway to 33 million divinities (India).

July-August

PEACEFUL USES OF THE ATOM. International atomic energy agency. Charting the nuclear labyrinth (I.H. Usmani). Second Panama canal thanks to nuclear explosives? (C. Schaerf) Handling isotopes with "kid gloves" (S. White). Controlling insects with radioisotopes (D.A. Lindquist). Carbon-14, archaeology's nuclear clock (W.F. Libby). Enigma of the Tartaria tablets. Sophie and Bruno in the land of the atom. Man-made atoms (G. Flerov, V. Kuznetsov). Nuclear energy and our future (G.T. Seaborg). Nations harness the atom. Unesco should be the organization for youth (R. Maheu). Art treasures (27) Profile of Chalchiuhcihuatl (Mexico).

September-October

JAPAN, A CENTURY OF CHANGE. Emperor Meiji (K. Kimura). Yukichi Fukuzawa, master of enlightenment. The great manifesto of Fukuzawa. "Secret" of Japan's educational triumph (M. Hiratsuka). From chrysanthemum to electronic computer. Japan's contribution to western literature and arts (E. Miner). Nine writers of modern Japan. Theatre of timeless tradition. Colour pages. Land of ten thousand dolls. Tokyo: a tale of two cities (W.A. Robson). Kenzo Tange and the megalopolis of tomorrow (S. Koffler). Hokkaido, frontier land of the far north. Unrest and promise of Japan's youth. How Japan streamlined its written language (S-I. Hasegawa). Art treasures (28) Rain (Japan).

November

HUMAN RIGHTS... TOMORROW. Odyssey of the human conscience (R. Maheu). Human rights... tomorrow (H. Saba). The right to be a man (J. Hersch): man's indomitable aspiration; against ten thousand faces of tyranny; against ten thousand faces of servitude; destination, planet earth. Equal rights for women.

December

VENICE IN PERIL (A. Vrioni). Threatened by land and sea; preserving the vitality of an historic island city (A special Unesco report). An artistic heritage in danger (L. Frederic). The international vocation of Venice (M. Brion). Unesco's appeal for Philae (R. Maheu). The survival of Philae (L. Christophe). Abu Simbel: rescue operation completed. Art Treasures (29) La Piazzetta (Venice).

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PHILAE
ISLAND OF THE GODS

(See page 46)
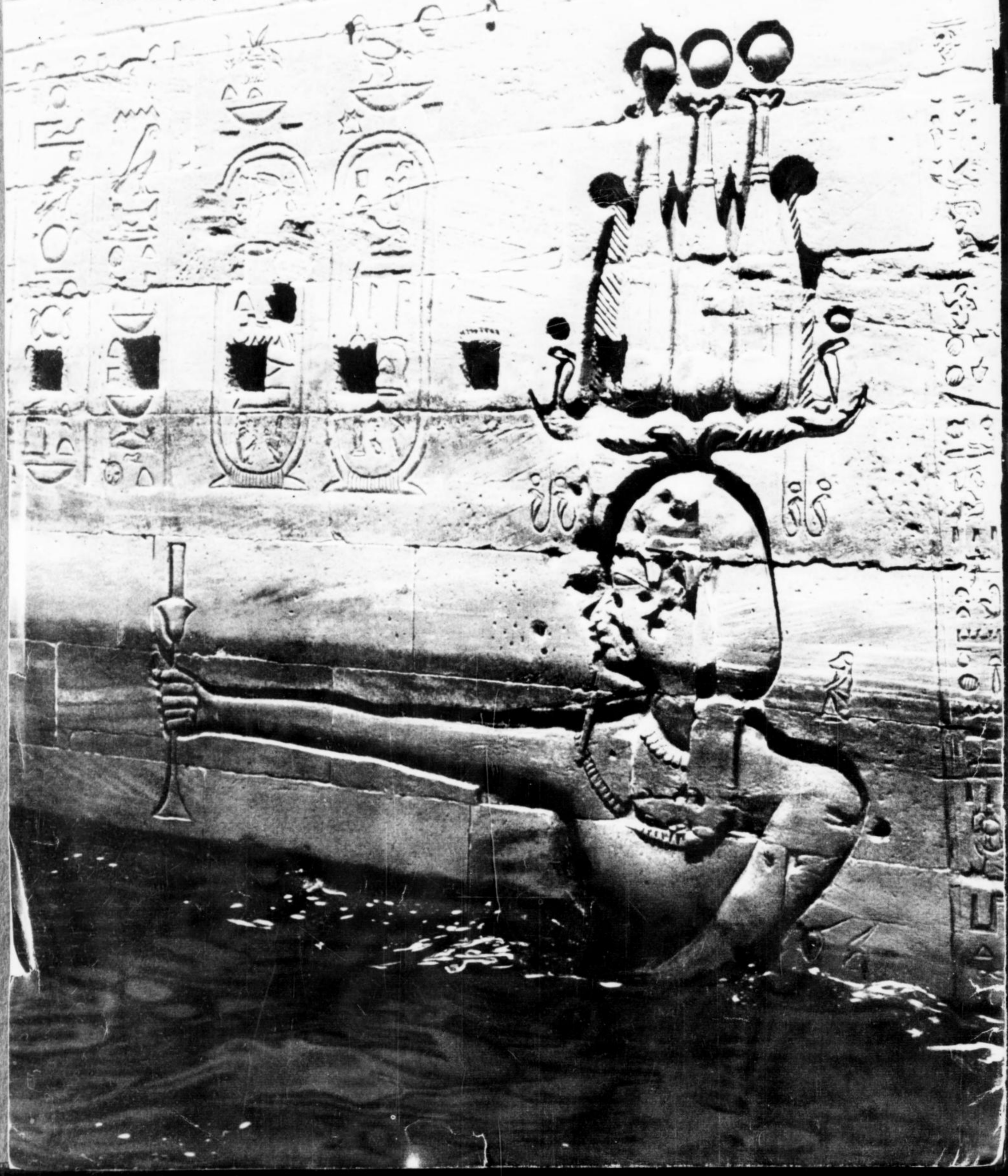
Photo Unesco-Dominique Roger